AUDIO / VIDEO STEREO RECEIVER

KR-V9010

SERVICE MANUAL

KENWOOD

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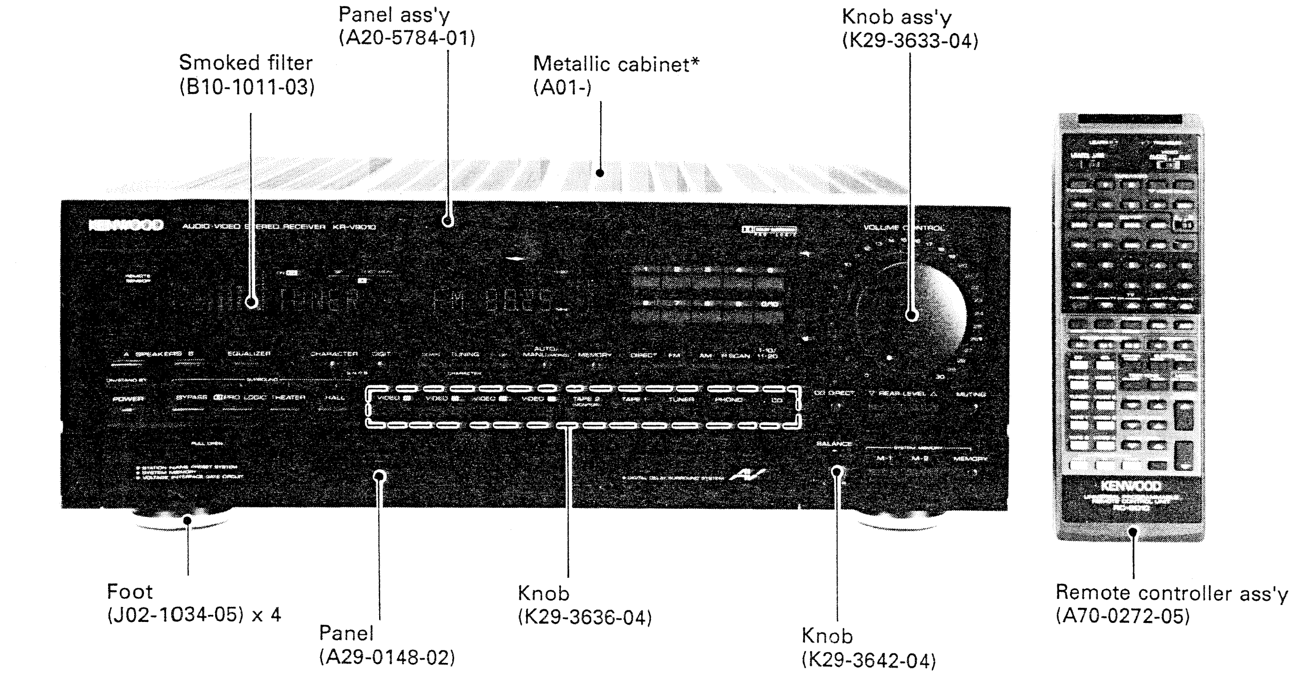
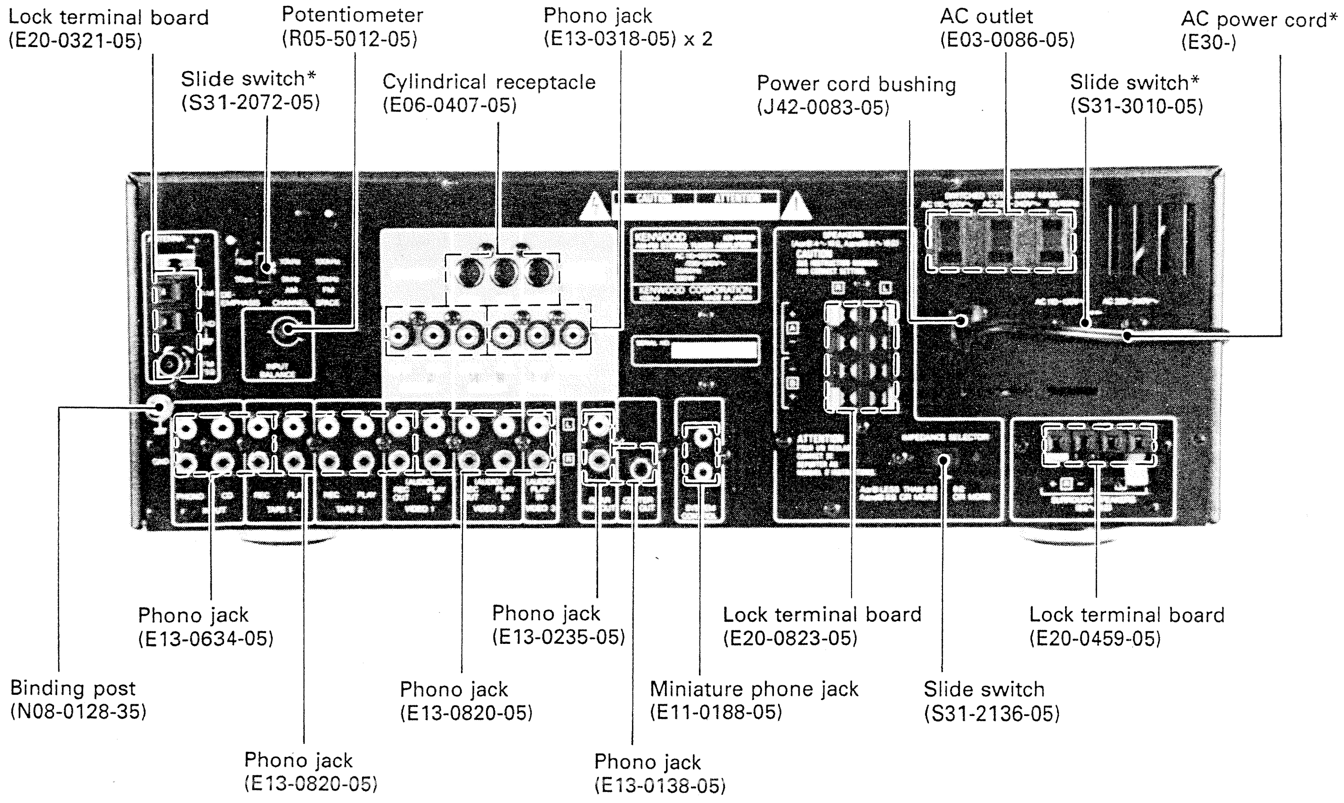
B51-3799-00 (O) 1891


Smoked filter
(B10-1011-03)
Panel ass'y
(A20-5784-01)
Metallic cabinet*
(A01-)
Knob ass'y
(K29-3633-04)
Foot
(J02-1034-05) x 4
Panel
(A29-0148-02)
Knob
(K29-3636-04)
Knob
(K29-3642-04)
Remote controller ass'y
(A70-0272-05)


Lock terminal board
(E20-0321-05)
Potentiometer
(R05-5012-05)
Slide switch*
(S31-2072-05)
Phono jack
(E13-0318-05) x 2
Cylindrical receptacle
(E06-0407-05)
AC outlet
(E03-0086-05)
AC power cord*
(E30-)
Power cord bushing
(J42-0083-05)
Slide switch*
(S31-3010-05)
Phono jack
(E13-0634-05)
Phono jack
(E13-0235-05)
Lock terminal board
(E20-0823-05)
Lock terminal board
(E20-0459-05)
Binding post
(N08-0128-35)
Phono jack
(E13-0820-05)
Miniature phone jack
(E11-0188-05)
Slide switch
(S31-2136-05)
Phono jack
(E13-0820-05)
Phono jack
(E13-0138-05)

*** Refer to parts list on page 95.**

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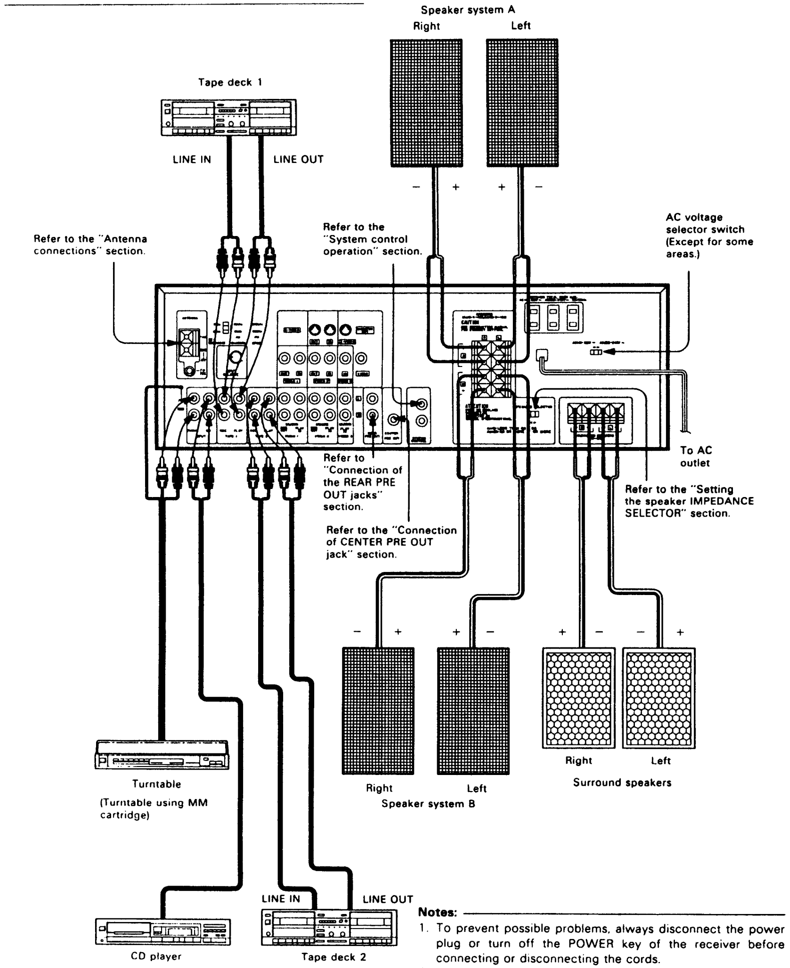
SPECIFICATIONS .... BACK COVER

Unit name	Japan made	Singapore made
Tuner unit	X05-3810-10 : K,P X05-3810-81 : U,UE	X05-3530-11 : K,P X05-3530-82 : U,UE
Pre amp unit	X08-2330-10 : K X08-2331-01 : P X08-2330-81 : U,UE	X08-2300-10 : K X08-2301-01 : P X08-2300-81 : U,UE
Audio unit	X09-2850-10 : K,U,UE X09-2851-01 : P	X09-2930-10 : K,U,UE X09-2931-01 : P
Sub unit	X13-6370-10 : K,P,U,UE	X13-6250-10 : k,P,U,UE
Display unit	X14-2560-10 : K,P,U,UE	X14-2700-10 : K,P,U,UE
Main amp unit	X89-1090-10 : K,U,UE X89-1091-01 : P	X89-1100-10 : K,U,UE X89-1101-01 : P

System connections

Make connections as shown in the diagram below.
When connecting the related system components, refer also to the instruction manuals of the related components.

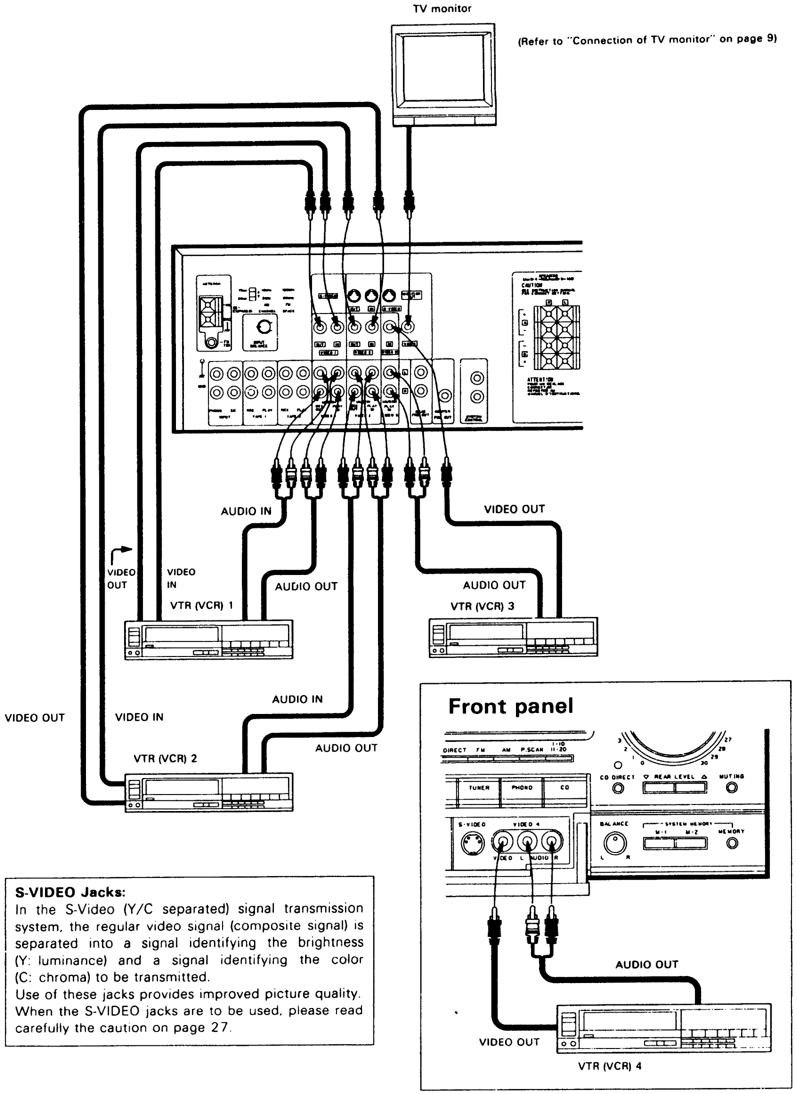
Connection of audio components


Speaker system A
Right
Left
Tape deck 1
LINE IN
LINE OUT
Refer to the "Antenna connections" section.
Refer to the "System control operation" section.
AC voltage selector switch (Except for some areas.)
- + + -
Refer to "Connection of the REAR PRE OUT jacks" section.
Refer to the "Connection of CENTER PRE OUT jack" section.
To AC outlet
Refer to the "Setting the speaker IMPEDANCE SELECTOR" section.
- + + - + - - +
Right
Left
Speaker system B
Right
Left
Surround speakers
Turntable
(Turntable using MM cartridge)
CD player
LINE IN
LINE OUT
Tape deck 2

Notes:

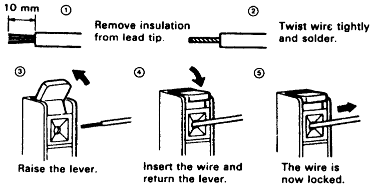
1. To prevent possible problems, always disconnect the power plug or turn off the POWER key of the receiver before connecting or disconnecting the cords.
2. When connecting the cords, always insert the pin plugs securely into the connecting jacks.
   - Insufficient insertion may result in no-sound or no- picture problems or generation of noise.

Connection of video components


TV monitor
(Refer to "Connection of TV monitor" on page 9)
AUDIO IN
VIDEO OUT
VIDEO OUT
VIDEO IN
AUDIO OUT
VTR (VCR) 1
AUDIO OUT
VTR (VCR) 3
AUDIO IN
VIDEO OUT
VIDEO IN
AUDIO OUT
VTR (VCR) 2
Front panel
DIRECT FM AM P.SCAN 1-10 11-20
CD DIRECT REAR LEVEL MUTING
TUNER PHONO CD
S-VIDEO VIDEO 4
VIDEO L AUDIO R
BALANCE SYSTEM MEMORY M-1 M-2 MEMORY
L R
AUDIO OUT
VIDEO OUT
VTR (VCR) 4

S-VIDEO Jacks:
In the S-Video (Y/C separated) signal transmission system, the regular video signal (composite signal) is separated into a signal identifying the brightness (Y: luminance) and a signal identifying the color (C: chroma) to be transmitted.
Use of these jacks provides improved picture quality. When the S-VIDEO jacks are to be used, please read carefully the caution on page 27.

Speaker connections


10 mm
①
Remove insulation from lead tip.
②
Twist wirε tightly and solder.
③
④
⑤
Raise the lever.
Insert the wire and return the lever.
The wire is now locked.

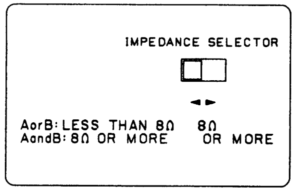
Speaker lead connection

When using the speaker A or speaker B separately

Speaker impedance	Selector position	
4Ω, 6Ω	A or B: LESS THAN 8Ω	◧
8Ω, 16Ω	8Ω OR MORE	◨

When using the speakers A and B simultaneously

Speaker impedance	Selector position	
8Ω, 16Ω	A and B: 8Ω OR MORE	◧



WARNING

Particular attention must be given to making good electrical contact at the receiver output and speaker terminals.

Poor or loose connections can cause sparking or burning at the terminals because of the very high power that the receiver can deliver. Follow these steps carefully.

■ Connecting the front speakers

Connect speakers rated at 4 ohm or more to the SPEAKERS terminals.

1. Connect the left speaker to the L speaker terminals on the rear of the receiver and the right speaker to the R terminals.
2. Connect each cable as shown in the illustration, taking care that the wires do not make contact with other terminals.

Notes:

1. Take care so as not to short the positive (+) and negative (−) speaker cords.
2. If the left and right speakers, or positive and negative cables, are connected the wrong way, the reproduced sound may be unclear, with ambiguous location of the musical instruments etc. To avoid this, pay attention to the left and right and positive and negative indications when connecting the speakers.

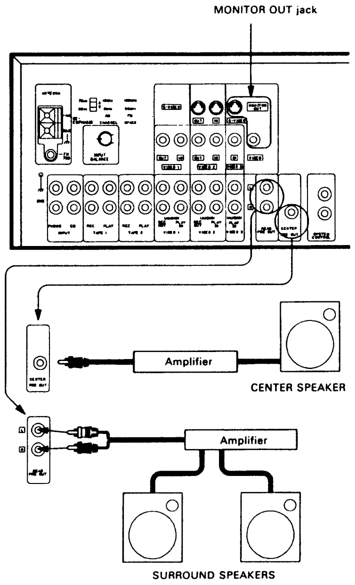
■ Setting the speaker IMPEDANCE SELECTOR

When connecting the speakers to the speaker terminals, set the IMPEDANCE SELECTOR switch according to the table on the left.

- When the IMPEDANCE SELECTOR switch is set to "8Ω OR MORE", it is impossible to use the A and B speakers at the same time.
  Therefore, when using the speakers A and B simultaneously, be sure to set the IMPEDANCE SELECTOR switch to the "A and B: 8Ω OR MORE" position.

Notes:

1. During speaker system connection and operation of the speaker IMPEDANCE SELECTOR, set the POWER key to OFF.
2. Check that the connected lead wires of the speaker systems do not contact with other jacks or terminals.



■ SURROUND SPEAKER terminals

Connect speakers having an impedance of between 8 ohms and 16 ohms, and place them to the left and right behind the listening position.

■ Connection of the REAR PRE OUT jacks

The Surround sound can be enjoyed sufficiently with the built-in amplifier. However when more power is required for Surround sound, use these jacks for an amplifier to drive the Surround Speakers.

Connect these jacks to the AUX jacks, etc. of the amplifier for Surround Speakers, using the audio connection cord.

■ Connection of CENTER PRE OUT jack

Use this jack when the Dolby Pro-Logic Surround function is used. Connect to an AUX jack, etc. of your amplifier using an audio connection cord.

■ Connection of TV monitor

Connect the MONITOR OUT jack on the rear panel of this unit to the video input jack of your monitor TV using a video cord with RCA pin jacks.

When a TV monitor equipped with an S-VIDEO jack is used, connect the S-VIDEO jack of this unit to the S-VIDEO jack of the TV monitor using a special S-Video connection cord.

Note:

A TV monitor can be connected to this unit via both the S-VIDEO jack and the VIDEO jack. With some TV monitors, when the S-VIDEO jack is used, the input signal to the TV monitor is automatically switched to the S-Video input. Since on-screen display is not possible if this occurs, disconnect the S-VIDEO jack and only use the VIDEO input (composite input) when the on-screen display is required.

When the signal is input via one of the unit's VIDEO input jacks, no signal is output from the MONITOR OUT S-VIDEO jack.

■ Connection of VCRs

- S-VIDEO jacks are also available for connection of VIDEO 2 inputs/outputs and VIDEO 4 inputs.

■ AC outlets

The AC outlets on the rear panel may be used to supply power to other components in the system, such as turntables, tape decks, etc. Never connect equipment whose power consumption exceeds the maximum value shown at each outlet.

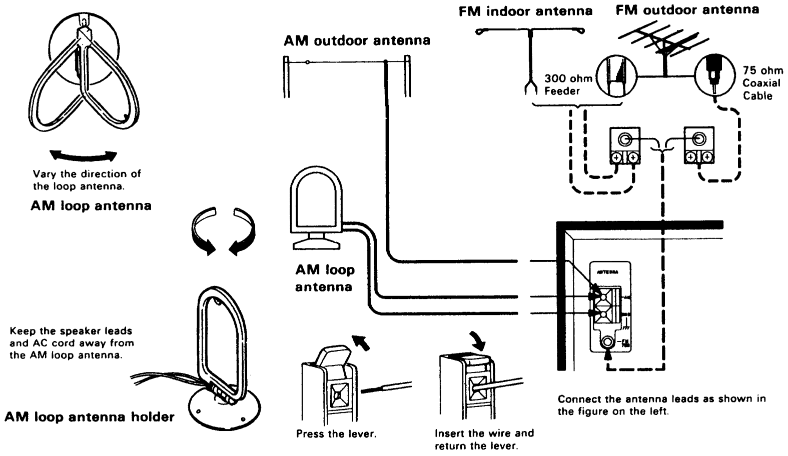
SWITCHED outlets:

These outlets supply power only when the unit is turned on. The maximum total capacity is 200 watts.

■ Ground

For maximum safety and minimum interference connect the GND terminal to a good earth ground if practicable. A good earth ground is a cold water pipe or a metal stake driven into moist earth. However, never use a gas pipe for this purpose.

Antenna connections


FM indoor antenna
FM outdoor antenna
AM outdoor antenna
300 ohm Feeder
75 ohm Coaxial Cable
Vary the direction of the loop antenna.
AM loop antenna
AM loop antenna
Keep the speaker leads and AC cord away from the AM loop antenna.
AM loop antenna holder
Press the lever.
Insert the wire and return the lever.
Connect the antenna leads as shown in the figure on the left.

■ AM antennas

AM loop antenna

Attach the AM loop antenna to the supplied loop antenna stand and place it on a shelf, etc., or install it on the rack or wall with screws.
Rotate the AM loop antenna to the right or left for best reception.

Note:
Do not place the AM loop antenna directly on the unit. As this unit employs computing devices, placing the AM loop antenna on the unit may result in noise generation. Place the AM loop antenna away from the unit.

AM outdoor antenna

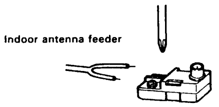
In steel buildings or at a great distance form the transmitter, it may be necessary to install an outside long wire antenna.
The end of this wire should be stripped of insulation and connected to the AM terminal. At this time, keep the loop antenna connected.

■ FM antennas

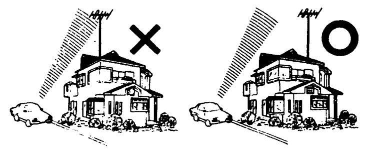
FM indoor antenna

Connect the T-shaped indoor antenna (supplied) to the 75 ohm FM ANTENNA terminal with the 75 ohm/300 ohm antenna adaptor as shown in the Antenna connections diagram. Spread the two arms that form the top of the "T" horizontally and hold them against convenient wall surfaces.
Try several locations for best results with your favorite stations. Tape the antenna in place where the best compromise is found between listening results and appearance.

Connection of the 75 ohm/300 ohm antenna adaptor


Indoor antenna feeder

Loosen the screws with a screwdriver. Insert the antenna feeder under the screw heads and tighten the screws firmly.



- To minimize auto-ignition noise, locate the antenna as far from heavy traffic as possible.
- Keep the feeder or coaxial calbe as short as possible. Do not bundle or roll up excess cable.
- The antenna should be at least two meters (6.6 feet) from reinforced concrete walls or metal structures.

FM outdoor antenna setting

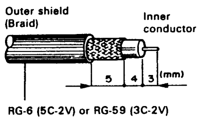
FM outdoor antenna

Be sure to use an outdoor FM antenna to receive good sound quality FM broadcasts with a minimum of noise. When connecting an outdoor antenna to the antenna terminals of this unit, use a 75 ohm/300 ohm antenna adaptor connected to the coaxial cable as illustrated. The 75 ohm/300 ohm antenna adaptor is supplied with this unit. Be sure to connect the coaxial cable to the adaptor as instructed below.

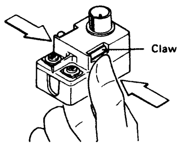
Note:
An FM outdoor antenna can be connected to the receiver with either a 75 ohm coaxial cable or a 300 ohm ribbon feeder. For proper connection, carefully read the instruction manual provided with outdoor antenna.

■ 75 ohm coaxial cable connection (Follow the order of numbers.)

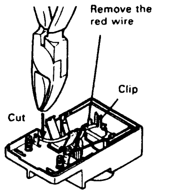
① Arrange the coaxial cable as illustrated.


Outer shield (Braid)
Inner conductor
5
4
3
(mm)
RG-6 (5C-2V) or RG-59 (3C-2V)

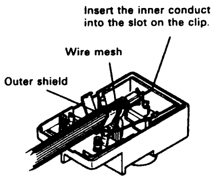
② Open the 75 ohm/300 ohm antenna adaptor cover.
Press the claws in the direction of the arrows with the fingers to release the lock and pull out the cover.



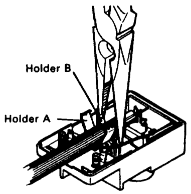
③ Cut off the red wire and remove it from the clip.


Remove the red wire
Clip
Cut

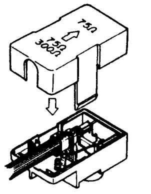
④ Connect the processed coaxial cable to 75 ohm/300 ohm antenna adaptor as shown below.


Insert the inner conductor into the slot on the clip.
Wire mesh
Outer shield

⑤ Secure the holders A and B.

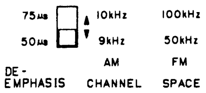

Holder B
Holder A

⑥ Close the cover.


75Ω
75Ω
300Ω

Area		Channel Space Frq.	FM DE-EMPHASIS
1.	U.S.A. Canada, Hawaii and Guam	FM: 100 kHz AM: 10 kHz	75 μs
2.	European countries and Far East countries	FM: 50 kHz AM: 9 kHz	50 μs

FM DE-EMPHASIS/CHANNEL SPACE table


75μs
50μs
10kHz
9kHz
100kHz
50kHz
AM
FM
DE-EMPHASIS
CHANNEL
SPACE

■ FM DE-EMPHASIS/CHANNEL SPACE switch (Except for some areas.)

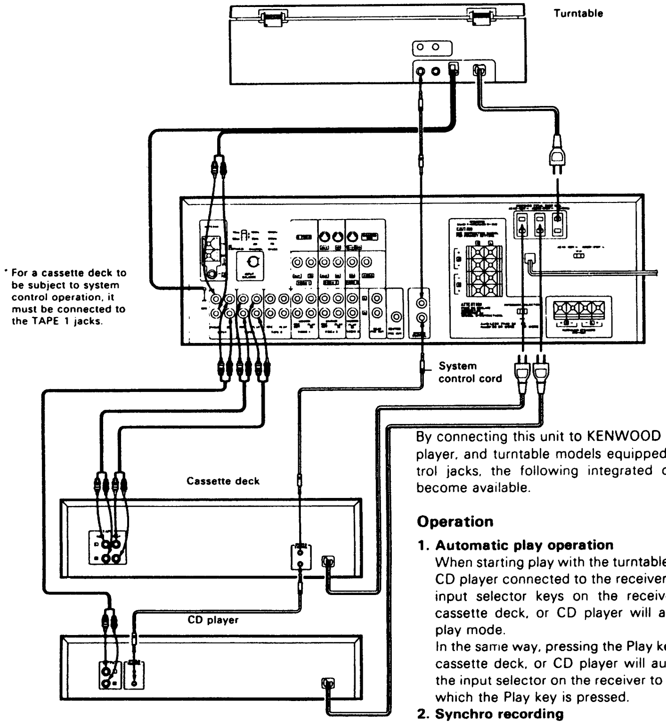
The FM DE-EMPHASIS/CHANNEL SPACE switch on the rear panel is set to the correct setting that prevails in the area to which the unit is shipped. However, if the FM DE-EMPHASIS/CHANNEL SPACE setting is not matched to the area where the unit is to be used (for instance, if you move from area 1 to area 2 or vice versa), desired reception of AM/FM broadcasts cannot be expected. In this case, change the FM DE-EMPHASIS/CHANNEL SPACE setting in accordance with the area corresponding to the table on the left.
The FM DE-EMPHASIS setting is switched over at the same time.

Note:
When changing the setting of the FM DE-EMPHASIS/CHANNEL SPACE switch, first disconnect the power cord, then reset the channel space switch, connect the power cord again, and turn the power on.

System control operation

Connection

Using the system control cords provided with KENWOOD system component models, make connections as shown below.

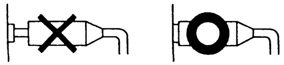

Turntable
* For a cassette deck to be subject to system control operation, it must be connected to the TAPE 1 jacks.
System control cord
Cassette deck
CD player

■ Connection of the audio cords and system control cord

Make sure that the audio cords are connected correctly right and left as in the figure.

If the system control cord and audio cords are not connected properly, the automatic system governing remote control and system functions will not operate.

(For connections of the audio cords, refer to the "System connections" diagram.)



By connecting this unit to KENWOOD cassette deck, CD player, and turntable models equipped with system control jacks, the following integrated operation features become available.

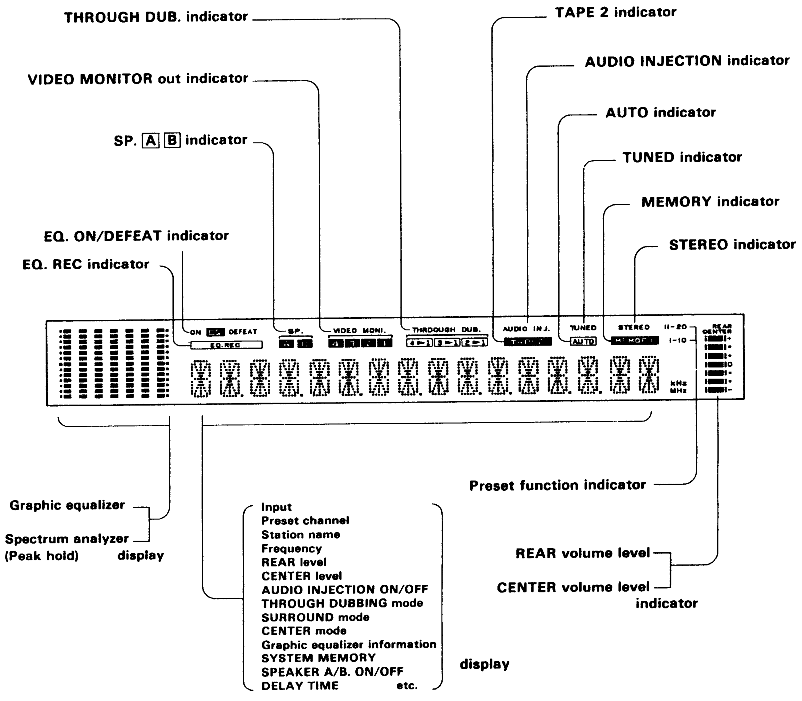
Operation

1. **Automatic play operation**
   When starting play with the turntable, cassette deck, or CD player connected to the receiver, press the desired input selector keys on the receiver. The turntable, cassette deck, or CD player will automatically enter play mode.
   In the same way, pressing the Play key of the turntable, cassette deck, or CD player will automatically switch the input selector on the receiver to the component on which the Play key is pressed.
2. **Synchro recording**
   To record the sound from the CD player or turntable onto a tape with the cassette deck, press the CD or PHONO of the input selector keys and load a CD or record. Set the cassette deck to rec pause mode, then press the PLAY (START) key of the CD player or turntable. The cassette deck will start recording automatically, synchronized with the CD player or turntable starting play.
3. **Remote control**
   The remote control unit provided with this unit, to which a KENWOOD system turntable, cassette deck, or CD player is connected, is equipped with related control keys. The related components can be controlled using these keys.

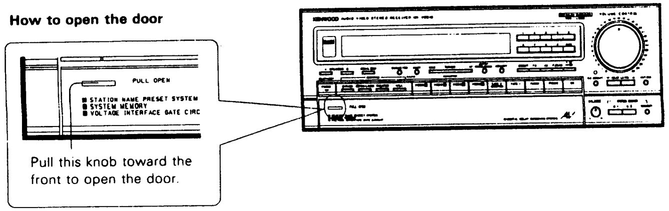
Note:
During recording with a cassette deck, the input selector on the receiver is fixed at the source from which the recording is made, by the system control circuit. At this time, pressing any of the input selector keys has no effect.

Controls and indicators

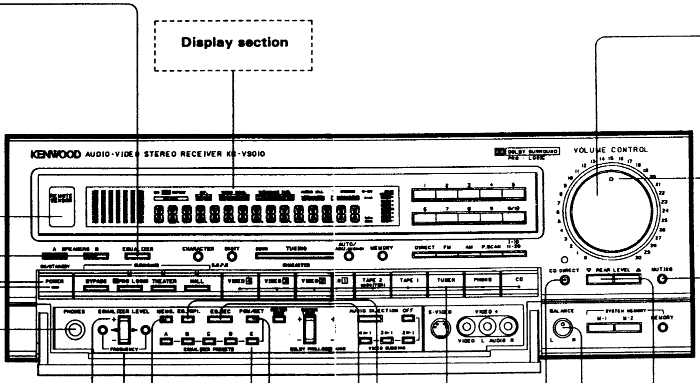
Display section


THROUGH DUB. indicator
VIDEO MONITOR out indicator
SP. A B indicator
EQ. ON/DEFEAT indicator
EQ. REC indicator
TAPE 2 indicator
AUDIO INJECTION indicator
AUTO indicator
TUNED indicator
MEMORY indicator
STEREO indicator
Graphic equalizer
Spectrum analyzer (Peak hold) display
Preset function indicator
REAR volume level
CENTER volume level indicator
Input
Preset channel
Station name
Frequency
REAR level
CENTER level
AUDIO INJECTION ON/OFF
THROUGH DUBBING mode
SURROUND mode
CENTER mode
Graphic equalizer information
SYSTEM MEMORY
SPEAKER A/B. ON/OFF
DELAY TIME etc.
display

How to open the door



Pull this knob toward the front to open the door.



REMOTE SENSOR
Point the supplied remote control unit towards this sensor and operate.

SPEAKERS A and B keys
Selects the speaker system to be used for listening. The speaker system being used is shown on the display.

POWER key
Switches the power ON/STANDBY.

Power stand-by indicator
This indicator lights if the power cord is plugged into the AC outlet. It is lit to show that the POWER key on the front panel or the POWER key on the remote control unit can be activated.

PHONES jack
This jack accepts the standard stereo headphone plug. When you wish to listen through headphones alone, set the SPEAKERS keys (A and B) both to the OFF position.

EQUALIZER LEVEL control keys
Adjust these keys up and down to equalize the sound level of the indicated frequencies with in a range of ±12 dB.

EQUALIZER FREQUENCY keys
These keys are used to select the equalizing frequency among 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, and 15 kHz.

Equalizer preset MEMO. key
This key is used to store an equalizer pattern the PGM PRESET memory.

EQUALIZER key
Press this key to ON and the frequency characteristics of the sound will be modified by the graphic equalizer.
In the DEFEAT position, the frequency characteristics remain unchanged.

EQUALIZER PRESETS (A ~ E) keys
Use these keys to store equalizer patterns in memory or to recall them.

Equalizer preset mode key (PGM/SET)
Each time this key is pressed, the recall mode of the equalizer preset patterns alternates between PGM (user programmed patterns) and SET (factory preset patterns.)

Input selector keys
Select the input source.

EQ./SPI key
Pressing this key alternates the display mode between EQ. (graphic equalizer) and SPI (spectrum peak indicator).

EQ. REC key
Used when recording a source to a tape deck through the graphic equalizer.

VOLUME CONTROL knob
This control adjusts the left- and right-channel volume levels simultaneously. Set it for the desired listening level.

Point indicator
This indicator blinks when the power is turned ON, muting is activated and when the volume control is adjusted with the remote control.

MUTING key
When the muting key is pressed, the point indicator in the VOLUME CONTROL knob blinks, and the overall listening sound level is reduced.
When the key is pressed again, the listening level is restored to same level as before.

REAR LEVEL control keys
Adjusts front/rear balancing when surround speakers are used. The control range is +20, −50 dB of the front speaker level.

BALANCE control knob
Adjust the left and right volume balance.

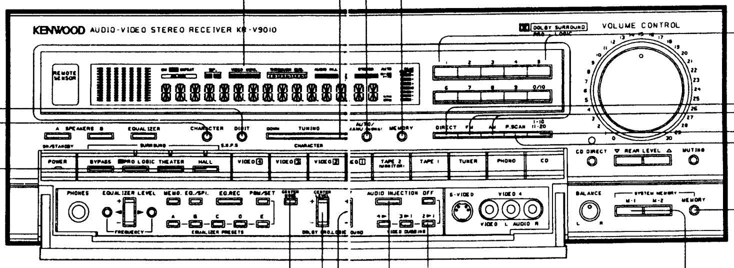
TUNING/CHARACTER keys
Used to change the frequency. Pressing the UP side will advance to a higher frequency and pressing the DOWN side will move to a lower frequency.
In the station name input mode, this key is used to select the characters.

AUTO/MANU. (MONO) key
Press this key to select the tuning mode between AUTO or MANUAL. In MANUAL mode, FM stereo broadcasts are received in monaural.

Numeric (1 ~ 0/10) keys
Use these keys to:
1) input directly the digits of frequencies, or
2) store and recall fequencies in the preset channels.

MEMORY key
When this key is pressed, the MEMORY indicator lights and the unit stands by for entry of a preset station number.

DIRECT key
Used to tune to a station directly. Input the desired frequency with the numeric keys after pressing the DIRECT key.



Band selector (AM, FM) keys
Press to select the receiving band.

DIGIT key
In the station name input mode, pressing this key advances the column after a character is selected with the TUNING/CHARACTER UP/DOWN key. When this operation is repeated four times the station name input mode is automatically released.

CHARACTER key
Press this key to activate the station name input mode.

SURROUND keys
Press any of these keys to select the required SURROUND mode. When the Surround sound is not required, press the BYPASS key to set to the BYPASS mode.

DELAY TIME keys
With the SURROUND mode activated, select the required delay time using these keys.

CENTER MODE key
This key is used to select the CENTER MODE for the DOLBY PRO-LOGIC SURROUND mode. Each time this key is pressed, the CENTER MODE changes in the following order:
→ NORMAL → WIDE → PHANTOM
CENTER OFF ←

CENTER LEVEL keys
These keys are used to adjust the CENTER LEVEL in the NORMAL or WIDE mode of DOLBY PRO-LOGIC function. The output level of the center speaker can be increased or decreased between +20 dB and −50 dB around the front speaker level.

VIDEO DUBBING keys
Press any of these keys when dubbing the video program sourceregardless of the input source selected by the input selector key.

AUDIO INJECTION key
Press this key ON when it is necessary to replace the sound of VCR with that of an AUDIO source during video dubbing.

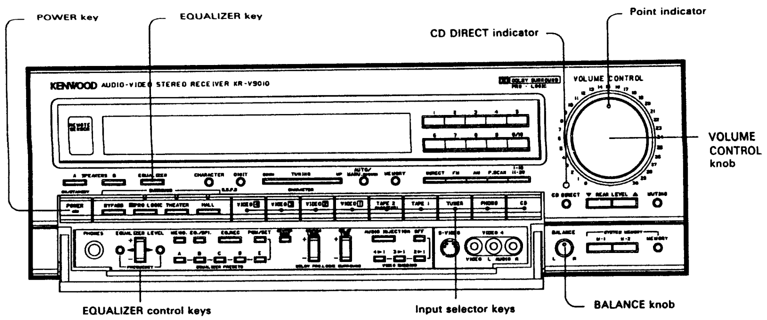
Preset function (1-10/11-20) key
Used to select the 1-10 or 11-20 preset channel setting. In either FM or AM mode, 20 stations can be preset at random as each setting ("1-10" or "11-20") can contain 10 preset stations. Indicator "1-10" lights when the "1-10" setting is used, and indicator "11-20" lights when the "11-20" setting is used.

PRESET SCAN key
Use this key for preset channel scanning.
When a frequency stored in the preset memory is being received, pressing this key shifts reception to the next frequency stored in the preset memory.

System MEMORY key
This key is used to store the current playing condition in memory.

SYSTEM MEMORY channel keys (M-1/M-2)
Two memory groups can be used with the System Memory feature.

Operating instructions



POWER switch stand-by
A small amount of current is retained to support the memory and remote control sensor function when the POWER is switched OFF. This is known as the standby mode. POWER may be switched ON/OFF by the remote control unit.

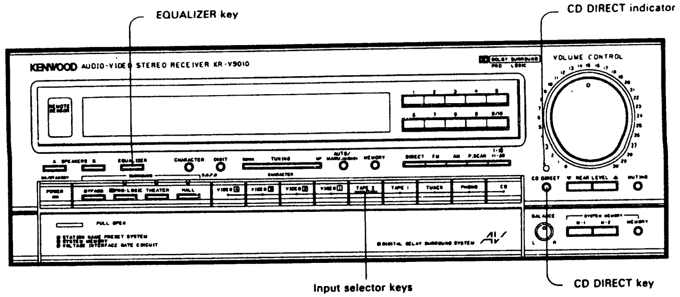
The standby indicator on the front panel remains lit while the power plug of the receiver is connected to the AC outlet.
If this set is not used for a long time, the power cord should be disconnected from the AC outlet.

To mute the sound temporarily
Press the MUTE key.
- The point indicator blinks, and the output is muted.
- When the MUTE key is pressed again, the muting is canceled, the point indicator lights steadily and the previous output level is resumed.
  The mute mode can also be released by changing the output level using the remote control unit.
- The point indicator also blinks (for approx. 4 seconds) when the muting functions is engaged immediately after the power is turned ON.

■ Basic operation

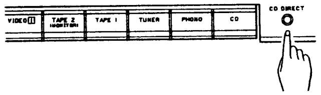
1. Press the POWER key to ON.
   - The display lights and the unit becomes operative.
   - Pressing the key again switches the power OFF.
2. Press one of the input selector keys to select the input source to be played.
   - If a System Control cord has been connected to the selected source component, it starts play automatically due the Automatic Play operation feature.
   - With the Automatic Play operation feature, when one of the source components is started to be played, the corresponding input selector is automatically switched for the source.
   - The selected input source is shown on the display.
3. If automatic play operation using the System Control cords has not been set, start playing the source component selected.
4. Adjust the output level with the VOLUME CONTROL knob.
   - When one of the VOLUME CONTROL keys on the remote control unit is pressed, the point indicator blinks and the VOLUME CONTROL knob is rotated.
5. Adjust the balance of the left and right output levels with the BALANCE knob.
6. Adjust the tone referring to the description in the "Graphic equalizer" section.
   - The graphic equalizer effect can be switched ON/DEFEAT by pressing the EQUALIZER key.

Notes:
1. The CD DIRECT key should usually be set to OFF (with the indicator not lit).
2. When the TAPE-2 selector switch is set to ON, the input source selected with the input selector keys cannot be heard from the speakers. To listen to a source other than tape deck 2, be sure to set the TAPE-2 selector key to OFF.



■ Operations using CD DIRECT key

To enjoy more pure and high-quality sound of Compact Discs:
1. Press the CD key
2. Press the CD DIRECT key.



3. Play the CD player.
   - The CD DIRECT key is given priority over the setting of the input selector keys.
   - The graphic equalizer cannot be used while the CD DIRECT key is ON.
   - To cancel the CD DIRECT input, press the CD DIRECT key again or press one of the input selector keys (except CD and TAPE 2 keys). The input will be switched to the source indicated on the display.

Note:
When the CD DIRECT key is pressed in one of the Surround modes (DD PRO-LOGIC, THEATER or HALL SURROUND), the unit enters the Bypass mode.

■ To record an input source

1. Select the source to be recorded with the input selector keys.
2. Play the source.
3. Set tape deck 1 and/or tape deck 2 to record mode.

Note:
When a tape deck is connected to this unit with a System Control cord, all of the input selector keys are disabled during recording and do not function until recording is finished. This will prevent the recording from being interrupted.

■ Tape dubbing

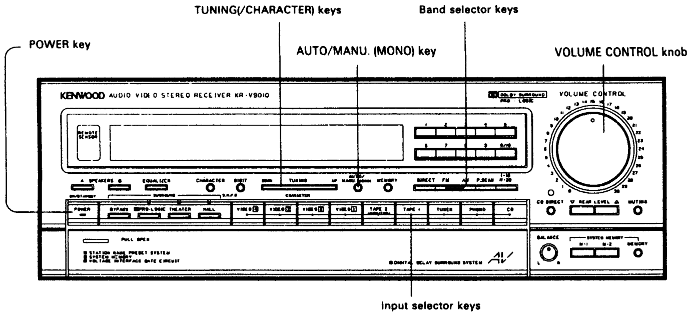
Tape recordings may be duplicated (dubbed) easily using two tape decks connected to the TAPE 1 and 2 jacks.

For example:
(TAPE 1 to 2):
1. Connect two tape decks to the TAPE 1 and TAPE 2 jacks.
2. Press the TAPE 1 key.
3. Play back the recorded tape and adjust the recording levels before starting tape dubbing.

(TAPE 2 to 1):
1. Press the TAPE 2 key.
2. Press a key other than TAPE 1 of the input selector keys such as CD.
3. Play back the recorded tape and adjust the recording levels before starting tape dubbing.
4. Do not press the TAPE 1 key during recording with tape deck 1.

Note:
Adjust recording levels on the deck that is making the copy using that deck's operating controls.

Listening to broadcasts



■ To listen to radio broadcasts

1. Press the POWER key to ON.
2. Press the TUNER input selector key.
3. Press the AM or FM band selector key.
4. Tune in the desired broadcasting station according to the instructions in the "Tuning methods" section below.
   - During tuning, sound is not heard because the muting circuit is activated. The sound will be heard suddenly as soon as a station is received,so be careful in setting the sound volume level.
5. When the desired station is received, adjust the volume with the VOLUME CONTROL knob.

■ Tuning methods

Auto tuning

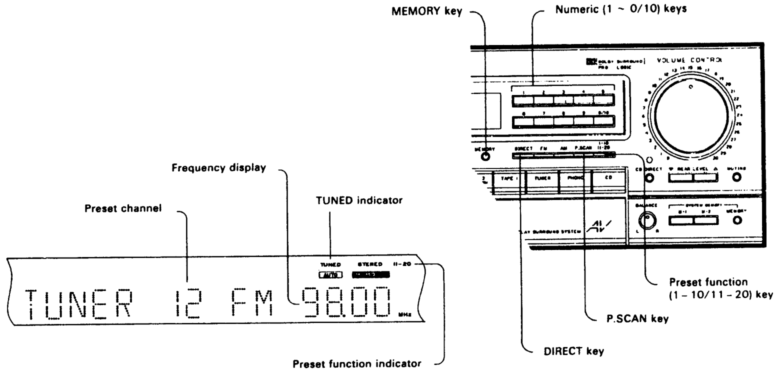
When the TUNING key is pressed, broadcast frequencies are scanned automatically in the upward or downward direction until a station is located and tuned in. The stereo/monaural FM reception mode is set automatically according to the station.

1. Press the AUTO/MANU. (MONO) key so that the AUTO indicator lights.
2. Press the UP or DOWN segment of the TUNING key.
   - Pressing the UP segment scans broadcast frequencies by varying the displayed frequencies in the upward direction, and pressing the DOWN segment scans by varying the frequencies in the downward direction.
   - When a broadcasting station is received, the frequency display freezes and indicates the frequency of the received station.
3. If the received station is not the desired station, press the same segment of the TUNING key again.
   - Repeat this until the desired station is received.

Manual tuning

Stations with weak signal strength cannot be received by auto tuning. In such cases, tune in the desired station by manual tuning. The station will be received in monaural mode (monaural mode is resistant to noise).

1. Press the AUTO/MANU. (MONO) key so that the AUTO indicator is off.
2. Press the UP or DOWN segment of the TUNING key.
   - Every time the TUNING key is pressed, the displayed frequency varies by one step in the direction indicated by the pressed segment.
   - Holding the TUNING key depressed varies the displayed frequency continuously.
3. When the frequency of the desired station is tuned in, release the TUNING key.
   - Noise may be heard if the tuned frequency is not precisely the same as the frequency of the station. In such cases, press the UP or DOWN segment of the TUNING key to adjust the tuning precisely.



Direct tuning

This method allows the desired frequency to be entered directly using the numeric keys, without using the TUNING key.

1. Press the DIRECT key.
2. Enter the frequency of the desired station with the numeric keys.
   - When all of the digits of the frequency have been entered, the station is automatically received.
   - If the entered frequency is not in the receivable frequency range, message "CAN NOT TUNE" is displayed for 5 seconds, and the last station received is received again.

■ Preset tuning

By storing the frequencies of broadcasting stations in the preset channels according to the instructions in the "To preset station frequencies" section, any of the preset stations can be received by one-touch operation.

1. Press the preset function key to select "1 – 10" or "11-20".
2. Press the numeric key corresponding to the preset channel of the desired station.
   - The display shows the frequency of that station, and the station is received.

■ Preset Scan

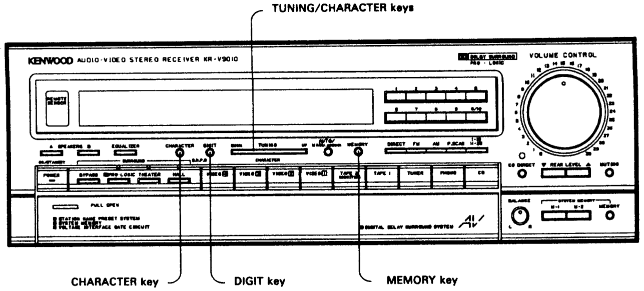
This function allows the preset stations stored in the preset channels to be received in sequence for 5 seconds each.

1. Press the P.SCAN key.
   - The frequency of each preset station is received for 5 seconds in sequence. A preset channel in which no station has been preset is skipped, and the scan operation moves to the next preset channel.
2. To stop Preset Scan, press the P.SCAN key again.
   - The preset station being received when the key is pressed is received continuously.

■ To preset station frequencies

1. Press the band selector key for the desired band (FM or AM).
2. Tune in the desired station following the instructions in the "Tuning methods" section.
3. Press the preset function key to select the 1 – 10 or 11 – 20 preset channel range.
4. Press the MEMORY key.
   - The MEMORY indicator on the display lights.
5. Within 5 seconds after pressing the MEMORY key, press the numeric key (1 to 0/10) corresponding to the preset channel in which the frequency is to be stored.
   - If a frequency has already been stored under the selected preset channel, the previously-stored frequency will be replaced by the new frequency.
6. Preset all desired frequencies by repeating steps 1 to 5 above.
   - When preset channels 1 to 10 have become full, press the preset function (1 – 10/11 – 20) key again to select the 11 – 20 range.

This unit allows both the frequencies and the names of broadcasting stations to be preset. When a station is recalled by preset tuning, the display shows both the frequency and the name of the station. (S.N.P.S.)


TUNING/CHARACTER keys
KENWOOD AUDIO-VIDEO STEREO RECEIVER KR-V9010
VOLUME CONTROL
CHARACTER key
DIGIT key
MEMORY key

Selection of display characters with the TUNING/CHARACTER key

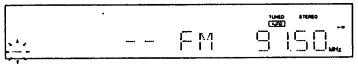
Every time the UP segment of the TUNING/CHARACTER key is pressed, the displayed character is varied in the following order:

→A→B→C···Z ··· 0→1→2→3········· 9
Blank

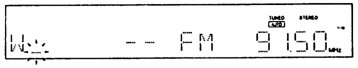
(Pressing the DOWN segment varies the displayed character in the reverse order.)

■ To preset station names and frequencies

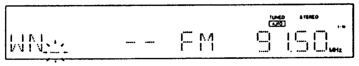
Example 1: To preset the 91.50 MHz FM broadcast frequency and its station name "WNY" in preset chanel number 2.


TUNED STEREO
-- FM 91.50 MHz

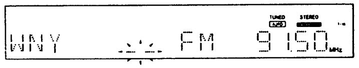
1. Tune to 91.50 MHz FM.
2. Press the CHARACTER key.


TUNED STEREO
W -- FM 91.50 MHz

3. Press the TUNING/CHARACTER key to select "W".
4. Press the DIGIT key to set the character and move to the next location.

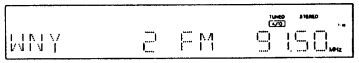

TUNED STEREO
WN -- FM 91.50 MHz

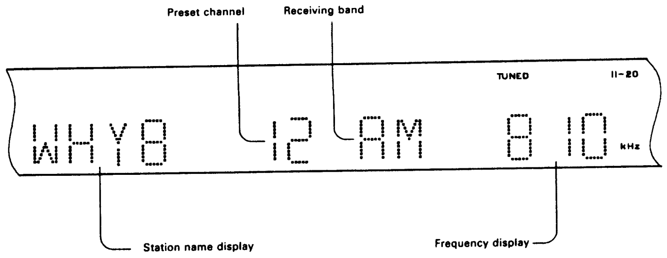
5. Press the TUNING/CHARACTER key to select "N".
6. Press the DIGIT key.
7. Press the TUNING/CHARACTER key to select "Y".


TUNED STEREO
WNY FM 91.50 MHz

8. Since the fourth column should be left blank, press the DIGIT key twice or press the CHARACTER key.
9. Press the MEMORY key.

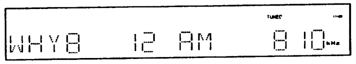
10. Press numeric key "2" to select preset channel 2.

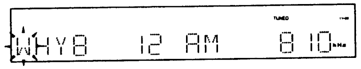

TUNED STEREO
WNY 2 FM 91.50 MHz


Preset channel
Receiving band
TUNED
II-20
WHY8 12 AM 810 kHz
Station name display
Frequency display

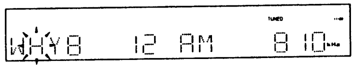
■ To change a preset station name

Example 2: To change the name of the 810 kHz AM broadcasting station stored in preset channel number 12 from "WHY8" to "WGY"

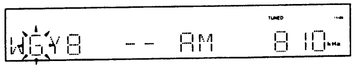

TUNED
WHY8 12 AM 810 kHz


TUNED
WHY8 12 AM 810 kHz

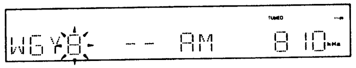
1. Recall preset channel number 12 with the preset function key and numeric key "2" according to the instructions in the "Preset tuning" section.
2. Press the CHARACTER key.


TUNED
WHY8 12 AM 810 kHz

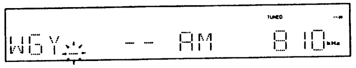
3. Press the DIGIT key to move to the first character location to be changed.


TUNED
WGY8 -- AM 810 kHz

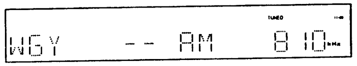
4. Press the TUNING/CHARACTER key to select "G".


TUNED
WGY8 -- AM 810 kHz

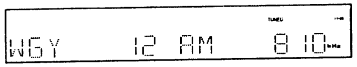
5. Press the DIGIT key twice.


TUNED
WGY -- AM 810 kHz

6. Press the TUNING/CHARACTER key to select a blank.


TUNED
WGY -- AM 810 kHz

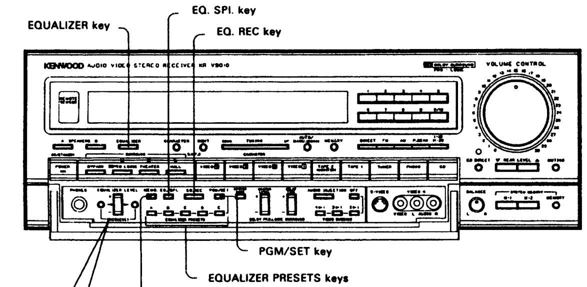
7. Press the DIGIT key or the CHARACTER key.
8. Press the MEMORY key.

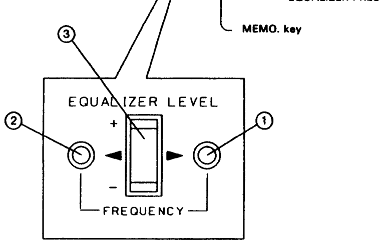

TUNED
WGY 12 AM 810 kHz

9. Press numeric key "2" to select preset channel number 12.

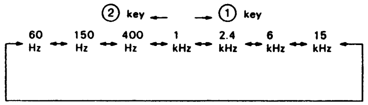
Graphic equalizer operation

This unit incorporates a high-performance 7-band stereo graphic equalizer. The graphic equalizer is equipped with memory for storing equalizer patterns created by the user, as well as for storing factory-preset patterns which can be recalled easily to provide equalizing effects suitable for various types of music.





EQUALIZER control keys
(Press the FREQUENCY keys ①, ②
to select the frequency to be equalized.)



Sequential change of equalizer frequency

■ To listen music processed by the graphic equalizer

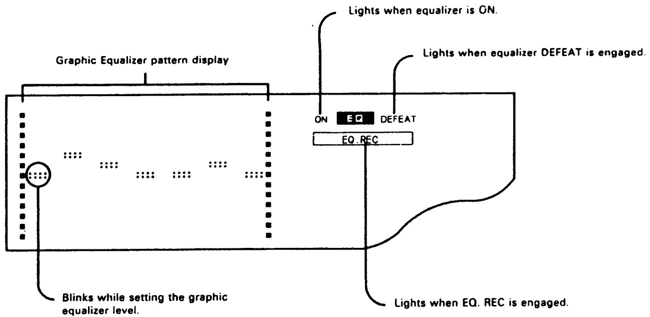
1. Press the EQUALIZER key.
   - The ON EQ. indicator lights.
2. Press the FREQUENCY ① or ② key shown in the figure on the left to select the required frequency to be equalized.
   - The frequency selected will appear in the display for 5 seconds.
   - The "::::" indication on the graphic equalizer display blinks.
   - Each time the FREQUENCY ① or ② key is pressed, the frequency is changed sequentially as shown in the table on the left.
3. Press the EQUALIZER LEVEL key ③ shown in the figure on the left to set to the required level for the selected frequency.
   - Pressing the EQUALIZER LEVEL + key increases the level of the selected frequency in +2 dB steps up to +12 dB.
   - Pressing the EQUALIZER LEVEL − key decreases the level of the selected frequency in −2 dB steps up to −12 dB.
4. Repeat the operation in steps 2 and 3 to set the equalizer pattern as desired.
   - It is also possible to select a preset equalizer pattern by pressing one of the EQUALIZER PRESETS keys (A ~ E)
5. To defeat the equalizer effect, press the EQUALIZER key again.
   - The EQ. DEFEAT indicator lights.

■ Equalizer recording

With this unit, sound processed by the graphic equalizer can be recorded through the TAPE-1 output.

1. Press the EQ.REC key.
   - The EQ. REC indicator lights.
2. Start recording on the TAPE 1 tape deck.
   - When the EQ.REC key is pressed again, the EQ. REC indicator goes off and normal (unprocessed) sound is output.

Note:
Equalizer recording is not possible with the TAPE-2 output.


Lights when equalizer is ON.
Graphic Equalizer pattern display
Lights when equalizer DEFEAT is engaged.
ON
EQ
DEFEAT
EQ REC
Blinks while setting the graphic equalizer level.
Lights when EQ. REC is engaged.

■ Preset equalizer memory and its applications

Five equalizer patterns are permanently preset in the memory of this unit for easy recalling at any time.

1. Press the PGM/SET key to SET.
   - The "EQ. SET-□" indication appears in the display for 5 seconds.
2. Press one of the EQUALIZER PRESETS keys (A ~ E).
   - The recalled equalizer pattern is displayed.

Characteristics of the "SET" preset patterns
A: For solid and punchy sound.
B: For effective reproduction of dynamic movie sound.
C: For easy-listening background music.
D: For music sound reproduction with a live, "being-there" feeling.
E: For realistically reproducing vocal music.

■ To store user-programmed equalizer patterns in memory

Up to five equalizer patterns created by the user can be stored in memory for recalling at any time.

1. Set the desired pattern with the equalizer control keys.
2. Press the PGM/SET key to PGM.
   - The "EQ. PGM-□" indication appears in the display for 5 seconds.
3. Press the MEMO. key.
   - The MEMORY indicator lights.
   - The "EQ. PGM-□" indication appears in the display.
4. Within 5 seconds, press any of the EQUALIZER PRESETS keys A to E.

■ To recall user-programmed equalizer patterns from memory

1. Press the PGM/SET key to PGM.
   - The "EQ. PGM-□" indication appears in the display for 5 seconds.
2. Press one of the EQUALIZER PRESETS keys (A ~ E).
   - The recalled equalizer pattern is displayed.

One of characters A to E is displayed inside "□".

■ To switch the display contents

Spectrum analyzer display

Press the EQ./SPI. key to SPI.
The spectrum analyzer display shows the frequency level distribution of the signal being played. The spectrum analyzer display is useful to refer to when setting equalizer patterns.

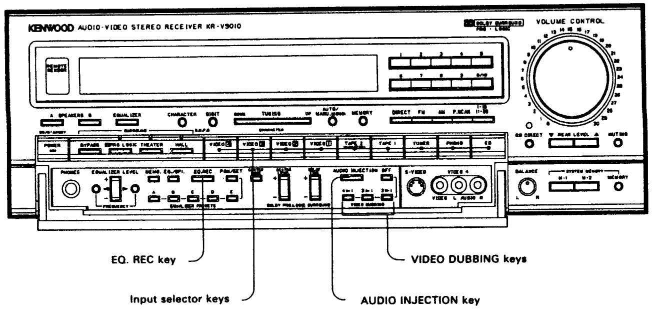
Graphic equalizer display

Press the EQ./SPI. key to EQ.
The frequencies are divided into seven frequency bands, and the level of each band can be set while observing the shape of the equalizer pattern.

- Even when the spectrum analyzer display is selected, the graphic equalizer is displayed for about 5 seconds in the following cases.

① When the POWER key is set to ON.
② When any of the equalizer control keys is pressed.
③ When the MEMORY key is pressed.
④ When any of the A to E keys is pressed.
After about 5 seconds, the spectrum analyzer display is resumed.

Playing video sources



■ To play a video source

(For Surround playback, refer to "Surround effects" on page 28.)

1. Press the POWER key to ON.
2. Switch on the power of the monitor TV connected to the MONITOR OUT jack.
3. Select the playback source with the input selector keys.
4. Play the video component.
5. The video is reproduced on the monitor TV, and the audio is reproduced through the speakers.

■ Dubbing between two VCRs

Video dubbing can be performed while listening to any desired source.
With this receiver, through dubbing from VCR 2, VCR 3 or VCR 4 to VCR 1 is possible.

To dub through from VCR 2 (or VCR 3 or VCR 4) to VCR1:

1. Press the VIDEO DUBBING [2 ▶ 1] (or [3 ▶ 1] or [4 ▶ 1]) key.
   - The [THROUGH DUB. 2 ▶ 1] (or [THROUGH DUB. 3 ▶ 1] or [THROUGH DUB. 4 ▶ 1]) indicator lights.
2. Set the VCR 1 to the recording mode.
3. Set the VCR 2 (or VCR 3 or VCR 4) to the playback mode.

To stop through dubbing or after dubbing is finished:

Press the VIDEO DUBBING [OFF] key.
- When through dubbing is not required, be sure to set to the OFF mode.

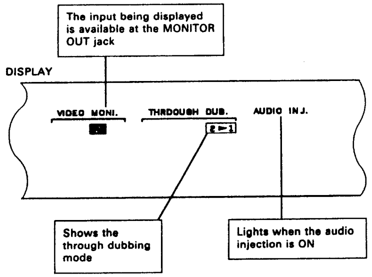
Note:
The audio injection does not function during through dubbing mode.

■ Audio injection

During video dubbing, the sound from the VCR can be replaced with sound from any desired audio source without affecting the picture.
In addition, the graphic equalizer effect can be applied to the recorded audio source.

1. Press the AUDIO INJECTION key so that the [AUDIO INJ.] indicator lights.
2. Select the desired audio source for Audio injection with the input selector keys.
3. When equalizer compensation is required when recording a desired audio source with audio injection ON, press the EQ. REC key.
   - The [EQ. REC] indicator lights up.
   - Set the equalizer controls as desired.
4. Operate each VCR for dubbing.

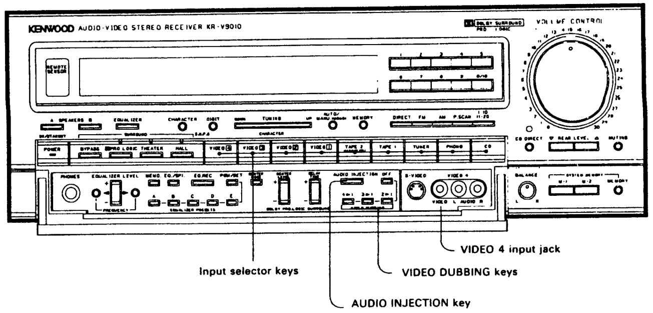
Note:
The audio injection does not function during through dubbing mode.



The input being displayed is available at the MONITOR OUT jack

Shows the through dubbing mode

Lights when the audio injection is ON



Example of video dubbing operation

■ To record with VCR1

When audio injection is not required (Through dubbing):

1. Press the required VIDEO DUBBING key ([2 ▶ 1], [3 ▶ 1] or [4 ▶ 1]).
2. Set the VCR 1 to the recording mode.
3. Set the playback VCR (VCR 2, VCR 3 or VCR 4) to the playback mode.

When audio injection is required:

1. Press the VIDEO DUBBING [OFF] key.
2. Select the playback VCR with the input selector keys.
3. Set the AUDIO INJECTION to ON.
4. Select the the audio source to be injected using the input selector keys.
5. Set the VCR 1 to the recording mode.
6. Play the required VCR and audio source component.

■ To record with VCR 2

1. Press the VIDEO DUBBING [OFF] key.
2. Select the playback VCR with the input selector.
   (When Audio Injection is required)
   (3) Set the AUDIO INJECTION to ON.
   (4) Select the audio source used for audio injection with the input selector.
3. Set the VCR 2 to the recording mode.
4. Start playing the playback VCR.
   (When the audio injection is ON, also play the audio source component.)

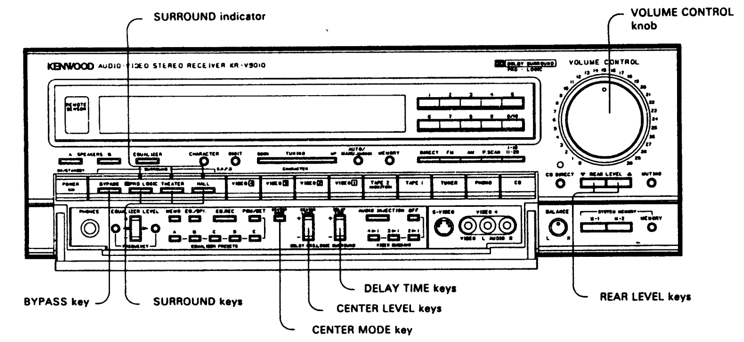
Note:

The rear panel video output jacks do not output a video signal in the following cases:

Signal input jack	Jacks with no output	
S-VIDEO [IN] jack of "VIDEO 2"	VIDEO OUT jacks of each "VIDEO"	VIDEO jack of "MONITOR OUT"
VIDEO [IN] jack of each "VIDEO"	S-VIDEO [OUT] jack of "VIDEO 2"	S-VIDEO jack of "MONITOR OUT"

- Since the S-VIDEO and VIDEO circuits are independent of each other, dubbing/playback from an S-VIDEO jack to a VIDEO jack or from a VIDEO jack to an S-VIDEO jack is impossible.
  However, dubbing/playback from the S-VIDEO jack of "VIDEO 4" to each VIDEO jack is possible.
  The relationships between the various video terminals are shown in the table on the left.
- When a video component or TV monitor having an S-VIDEO jack is used, be sure to connect both the S-VIDEO jack and the (composite) VIDEO jack to the S-VIDEO and VIDEO jacks of this unit.

Surround effects



The reason why the sound you experience in concert halls or stadiums is so real and live is that the sound comes not only from the front but also from the surroundings. To reproduce such conditions as close as possible to reality, this unit is equipped with three Surround modes (DD PRO-LOGIC, THEATER, HALL). In addition, three Dolby PRO-LOGIC modes – NORMAL, WIDE, and PHANTOM – are provided to enhance the sound directivity and to provide the sound with a more surrounding, powerful "being-there" feeling.

Note on Dolby Surround
Video softwares marked with DD DOLBY SURROUND are encoded with Dolby Surround information. This unit incorporates a Dolby Surround recoder for playing such videotapes with the same sound effect as Dolby Stereo movies projected in movie theaters.
To obtain this effect, press the DD PRO-LOGIC key to ON.

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■ Surround modes

DD PRO-LOGIC mode

The PRO-LOGIC mode is used when playing a source encoded with Dolby Surround signals. (The following modes can be selected by pressing the CENTER MODE key repeatedly.)

NORMAL:
Select this mode when the signal output from the CENTER OUT jack on the rear panel is reproduced through a small center speaker. Low frequencies below 100 Hz in this signal are distributed to the left and right front speakers, and frequencies above 100 Hz are reproduced through the center speaker.

WIDE:
The entire signal output from the CENTER OUT jack on the rear panel is sent to the center speaker, without the low frequencies below 100 Hz being routed to the left and right speakers as in case of the Normal mode.
Set to this mode if the speaker used as the center speaker is the same type of speaker as those used for the front left and right positions.

PHANTOM:
This mode allows the PRO-LOGIC effect to be enjoyed even when a center speaker is not connected. In this case, the center signal is distributed to the left and right front speakers.

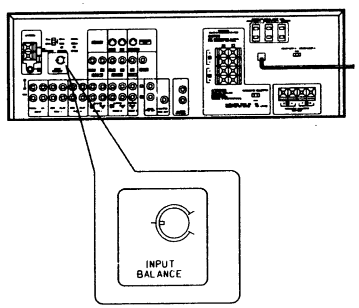
CENTER OFF:
Use this mode wen adjusting the input balance.

THEATER Surround mode

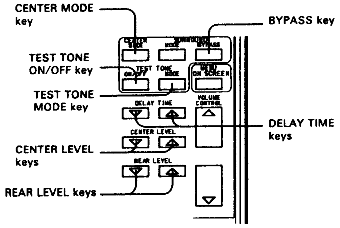
This mode provides a three-dimensional effect similar to that of a movie theater. With this mode, you can enjoy a Surround sound effect similar to Dolby Surround sound even when playing a video program which is not encoded with the Dolby Surround system.

HALL Surround mode

This mode provides a natural reverberation effect. When used with a normal source, you can enjoy the being-there feeling or "presence" as in the hall.



INPUT BALANCE



Remote control

How to make adjustments for the Dolby Pro-Logic mode

■ INPUT BALANCE adjustment

1. Press the DD PRO-LOGIC key.
   - "DOLBY PRO LOGIC" will appear on the display.
2. Play a Dolby Surround-encoded video program.
3. Lower the Surround Speaker output with the REAR LEVEL key.
4. Select the "CENTER OFF" mode with the CENTER MODE key.
   - Each time the CENTER MODE key is pressed, the mode changes repeatedly in the following sequence.

→ NORMAL → WIDE → PHANTOM →
CENTER OFF

5. Adjust the INPUT BALANCE knob so that the level of the monaural sound (voices) is minimized.

■ Surround Level adjustment

NORMAL/WIDE

1. Select "NORMAL" or "WIDE" with the CENTER MODE key.
2. Press the TEST TONE ON/OFF key on the remote control at the listening position.
   - A beep tone will be heard.
3. Press the TEST TONE MODE key on the remote control.
   - Each time the key is pressed, the tone will be heard from one of four positions in the following order:

→ LEFT → CENTER → RIGHT → REAR

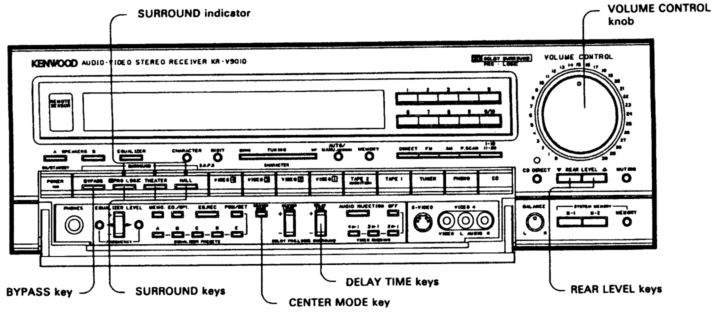
4. Adjust the CENTER LEVEL and REAR LEVEL keys so that the output volumes from the five speakers are almost identical when listened from the listening position.
5. Press the TEST TONE ON/OFF key to OFF.

PHANTOM

1. Select "PHANTOM" with the CENTER MODE key.
2. Press the TEST TONE ON/OFF key on the remote control at the listening position.
   - A beep tone will be heard.
3. Press the TEST TONE MODE key on the remote control.
   - Each time the key is pressed, the tone will be heard in one of three positions in the following order:

→ LEFT → RIGHT → REAR

4. Adjust the REAR LEVEL keys so that the output volumes from the four speakers are almost identical when listened from the listening position.
5. Press the TEST TONE ON/OFF key to OFF.


SURROUND indicator
VOLUME CONTROL knob
KENWOOD AUDIO-VIDEO STEREO RECEIVER KR-V9010
BYPASS key
SURROUND keys
CENTER MODE key
DELAY TIME keys
REAR LEVEL keys

■ THEATER SURROUND, HALL SURROUND adjustment

1. Press the THEATER or HALL Surround key.
2. Adjust the rear speaker output level with the REAR LEVEL control keys.
   - The REAR LEVEL control range is from +20 dB to −50 dB of the front speaker level.

■ Delay time adjustment

The output signal from the rear speakers is delayed slightly than that of front speakers for each Surround mode separately. The delay time can be adjusted as desired separately for the DD PRO LOGIC and THEATER SURROUND modes. The delay time of the HALL SURROUND mode is fixed at 30 ms and cannot be adjusted.

1. Press the DD PRO LOGIC or THEATER key.
2. Adjust the delay time using the DELAY TIME keys.
   - For the DD PRO LOGIC mode, the delay time can be adjusted between 15 ms and 30 ms in 1.5 ms steps.
   - For the THEATER SURROUND mode, the delay time can be adjusted between 0 ms and 30 ms in 1.5 ms steps.

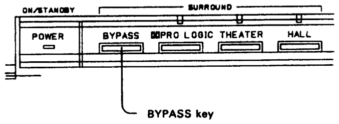
■ To play sound with the Surround effect

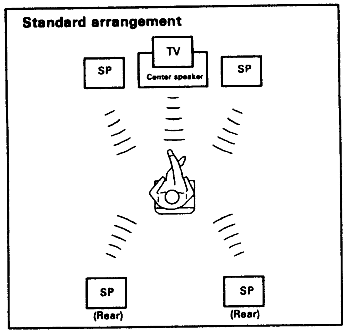
1. Set the SURROUND key to ON.
   - The selected Surround mode indicator lights.
2. Select the source to be played with the surround sound effect, and play it.
3. Adjust the volume level.
   - The VOLUME CONTROL allows you to increase or decrease the volume level of all of the front, rear and center channels simultaneously.

■ To release the Surround mode

Press the BYPASS key.

- Be sure to set the BYPASS mode when the Surround effect is not required.


ON/STANDBY
SURROUND
POWER
BYPASS
DD PRO LOGIC
THEATER
HALL
BYPASS key



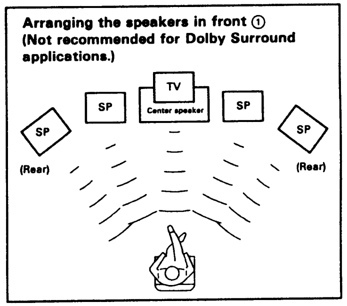
Standard arrangement

TV
SP
Center speaker
SP
SP
(Rear)
SP
(Rear)

■ Arranging the speakers

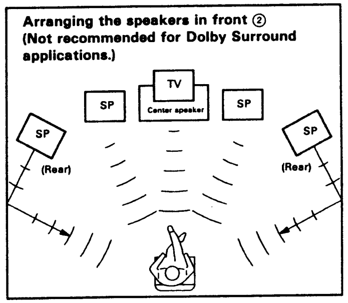
A variety of rear speaker arrangement patterns are possible according to room size, reverberation characteristics, etc.

The arrangement patterns given here are typical examples for effective Surround sensation. The given examples are only suggestions. Arrange the speakers according to your individual taste.



Arranging the speakers in front ①
(Not recommended for Dolby Surround applications.)

TV
SP
Center speaker
SP
SP
(Rear)
SP
(Rear)



Arranging the speakers in front ②
(Not recommended for Dolby Surround applications.)

TV
SP
Center speaker
SP
SP
(Rear)
SP
(Rear)

When the left and right walls are made of a hard material such as like concrete, facing the rear (Surround) speakers towards the walls may give a better effect.

System memory

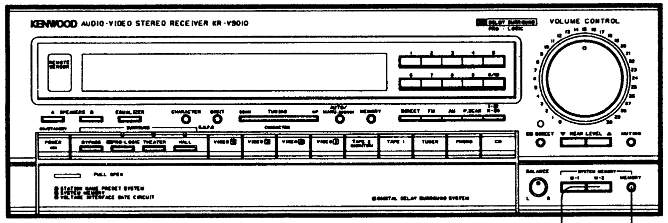
The required playback condition can be stored in memory for each music source (tape, compact disc, phonograph record (disc), or broadcasting program), so that the same balance (between front and rear channels) and the same equalizer pattern, etc. can be recalled at any time instantly.

Two types of settings can be stored in memory, and by pressing the appropriate SYSTEM MEMORY (M-1 or M-2) key you can recall the preset sound field condition instantly.

Stored contents:

The stored contents in the System Memory are as follows:

- Input source (CD, PHONO, TUNER, TAPE, VIDEO, etc.) (including TAPE 2)
- Preset channel in the TUNER position
- Audio injection
- EQUALIZER key setting (ON/DEFEAT)
- EQ. REC key setting (ON/OFF)
- Preset channel of the equalizer pattern
- SURROUND setting (ON/OFF)
- SURROUND mode
- Center mode
- Center level
- DELAY TIME
- Rear level
- Video monitor out
- SPEAKERS A, B
- CD DIRECT ON/OFF



SYSTEM MEMORY M-1, M-2 keys

SYSTEM MEMORY key

■ How to preset the System Memory

1. Set the playback conditions as desired.
   - When selecting the tuner or equalizer, be sure to designate the preset channel.
2. Press the SYSTEM MEMORY key.
   - The MEMORY indicator lights and the "SYSTEM MEMORY ⁚" indication appears in the display (for 5 seconds).
   - If the "CAN NOT MEMORIZE" indication is displayed, the tuner frequency or equalizer pattern will not be preset in memory.

   After presetting the playback condition for each channel, press the MEMORY key again.

Note:

If the contents of a preset channel is changed after being designated as the tuner or equalizer section channel for System Memory, the contents of the System Memory channel will also be changed.

■ How to recall System Memory

1. Press the M-1 or M-2 key.
   - The display shows "SYSTEM MEMORY 1" or "SYSTEM MEMORY 2" for about 2 second, and the settings of each section are changed to the preset contents.
2. Readjust the setting of each section as required.
   - When PHONO is selected as the input source, with a system-controlled turntable connected, the turntable will automatically start playing by recalling the System Memory. Therefore, be sure to set a record on the platter of the turntable before activating the System Memory function.
   - In the same way, when a system-controlled tape deck or CD player is connected to this unit, the tape deck or CD player can be started automatically by activating the System Memory function.

On-screen display

With this function, a comprehensive character display appears on the monitor screen every time an input selector key, etc. is pressed.

There are six screen display patterns.

Each time the MENU ON SCREEN key on the remote control is pressed, the screen pattern is changed in the following order:

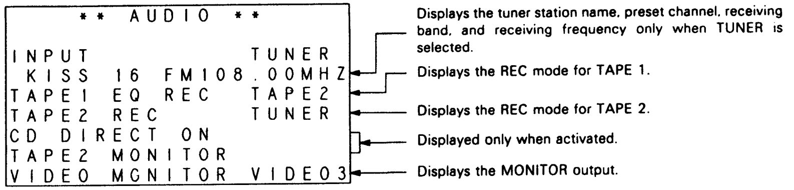
Screen 1 (AUDIO) → Screen 2 (VIDEO) → Screen 3 (SURROUND) → Screen 4 (TUNER PRESET) → Screen 5 (ON SCREEN STANDBY) → Screen 6 (ON SCREEN OFF) → Screen 1

When one of the first four screens (Screen 1 to Screen 4) is displayed, it will be maintained until a key corresponding to the screen menu is pressed.

With Screen 5, when a relevant key is pressed, the screen corresponding to the key will appear for 5 seconds and then go out.

With Screen 6, there is no display on the monitor screen.

1. SCREEN 1 (AUDIO):
- Displays each setting of the various audio sources.



```
      ** AUDIO **

INPUT               TUNER
 KISS  16  FM108.00MHZ
TAPE1 EQ  REC     TAPE2
TAPE2 REC         TUNER
CD  DIRECT  ON
TAPE2 MONITOR
VIDEO MONITOR    VIDEO3
```

Displays the tuner station name, preset channel, receiving band, and receiving frequency only when TUNER is selected.

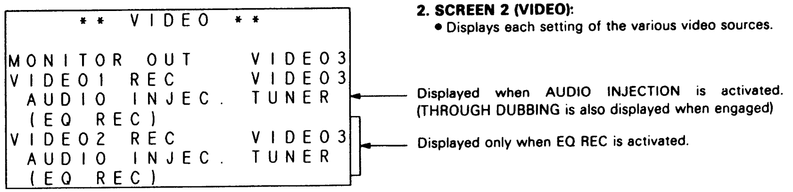
Displays the REC mode for TAPE 1.

Displays the REC mode for TAPE 2.

Displayed only when activated.

Displays the MONITOR output.

2. SCREEN 2 (VIDEO):
- Displays each setting of the various video sources.

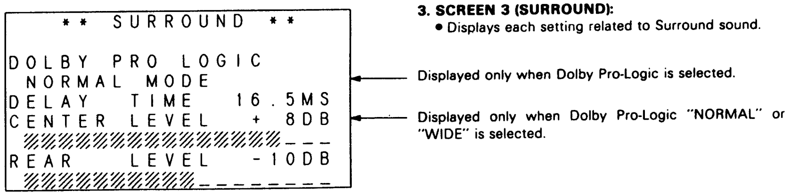


```
      ** VIDEO **

MONITOR  OUT      VIDEO3
VIDEO1  REC       VIDEO3
 AUDIO  INJEC.    TUNER
 (EQ  REC)
VIDEO2  REC       VIDEO3
 AUDIO  INJEC.    TUNER
 (EQ  REC)
```

Displayed when AUDIO INJECTION is activated. (THROUGH DUBBING is also displayed when engaged)

Displayed only when EQ REC is activated.

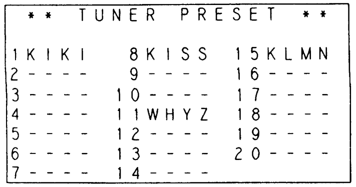
3. SCREEN 3 (SURROUND):
- Displays each setting related to Surround sound.



```
     ** SURROUND **

DOLBY  PRO  LOGIC
 NORMAL  MODE
DELAY   TIME     16.5MS
CENTER  LEVEL    +  8DB

REAR    LEVEL     -10DB

```

Displayed only when Dolby Pro-Logic is selected.

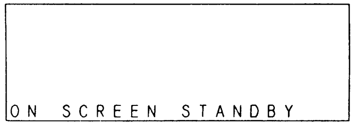
Displayed only when Dolby Pro-Logic "NORMAL" or "WIDE" is selected.



```
 * *   T U N E R   P R E S E T   * *

1 K I K I      8 K I S S    1 5 K L M N
2 - - - -      9 - - - -    1 6 - - - -
3 - - - -    1 0 - - - -    1 7 - - - -
4 - - - -    1 1 W H Y Z    1 8 - - - -
5 - - - -    1 2 - - - -    1 9 - - - -
6 - - - -    1 3 - - - -    2 0 - - - -
7 - - - -    1 4 - - - -
```

4. SCREEN 4 (TUNER PRESET):

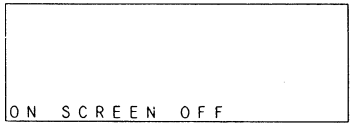
- Displays the contents of the tuner preset channels.



```
ON SCREEN STANDBY
```

5. SCREEN 5 (ON SCREEN STANDBY):

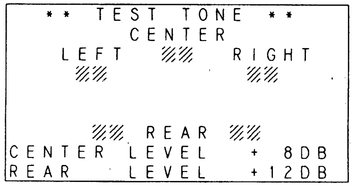
- Shows the standby mode for the on-screen display. The screen shown in the figure appears for 5 seconds, then goes out.
- In this mode, when a relevant key is pressed, the corresponding screen will be displayed for 5 seconds, then go out.



```
ON SCREEN OFF
```

6. SCREEN 6 (ON SCREEN OFF)

- Shows that the on-screen display is turned OFF. When the power is switched ON, the figure shown on the left will be displayed from 5 seconds, then go out.
- There is no on-screen display in this mode.
- Set to this mode when noise interferes with the video picture.



```
   * *  T E S T   T O N E  * *
            C E N T E R
      L E F T    ▨▨    R I G H T
        ▨▨                ▨▨


          ▨▨  R E A R  ▨▨
C E N T E R  L E V E L     +  8 D B
R E A R      L E V E L     + 1 2 D B
```

7. TEST TONE DISPLAY

- This screen appears when the TEST TONE mode is engaged. The " ■ " (darkened cursor) blinks at the position where the test tone is being output.

Note:

The position of the on-screen display (on the TV screen) may vary depending on the video software being played.

Remote control operation

■ Operations

1. Connect the power plug of the receiver to an AC outlet.
   - The receiver enters the power standby mode and the power standby indicator lights.
2. Press the POWER key of the remote control unit or the POWER key of the receiver.
   - The receiver enters the power ON mode.
3. The various functions of the receiver can be operated with the keys of the remote control unit.

Note for remote control operation

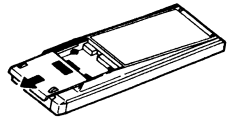
After pressing one of the operation keys, when the next operation is required, press the next operation key firmly after an approx. 1 second interval.

If the next operation key is pressed immediately after the previous key, misoperation may result.

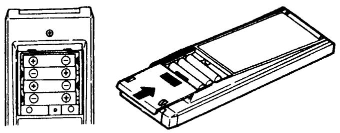
■ Loading batteries into the remote control unit

1. Remove the battery cover.

   While gently pressing the battery cover located on the rear of the remote control unit, slide it in the direction of the arrow.



2. Insert four LR03 size batteries. Take care to respect the battery polarity (+, −), and be sure to close the cover after inserting.



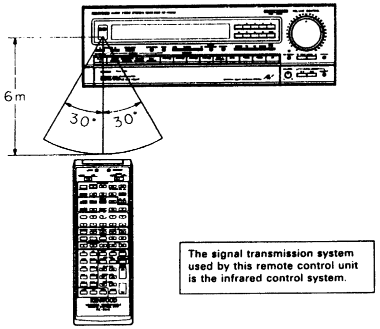
Notes:

1. During battery replacement, if new batteries are not loaded within 3 minutes after the old batteries are removed, the programmed codes may be cleared. If this occurs, these codes should be programmed again. However, the fixed key codes will not be lost.
2. The battery life of the remote control unit is approximately six months, although this figure can vary depending on frequency of use.
3. The batteries included with the unit are provided for use in checking remote control operation, and their service life may be shorter than noted above. When the distance from which remote control operation is possible becomes shorter, or when the remote control ceases to function, replace all four batteries with the new alkaline batteries.
4. Do not use old and new batteries together, as this may cause corrosion, battery leakage, etc.

■ Operating range of the remote control unit

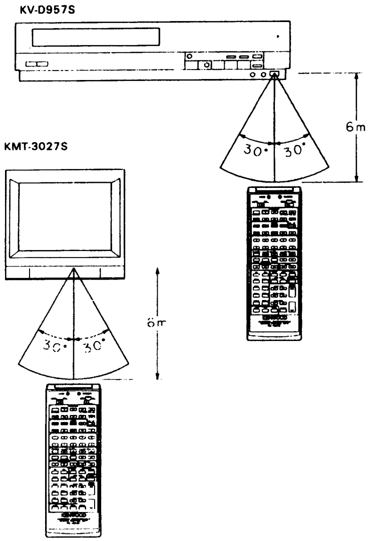
The operating range of the remote control unit may differ according to temperature, humidity, or using conditions, however, it is defined approximately as shown in the figure below:

For controlling audio



The signal transmission system used by this remote control unit is the infrared control system.

For controlling TV and VIDEO sets (U.S.A. and military models)



The remote control unit provided has a memorizing function which allows the user to program the remote control functions of other A/V components.

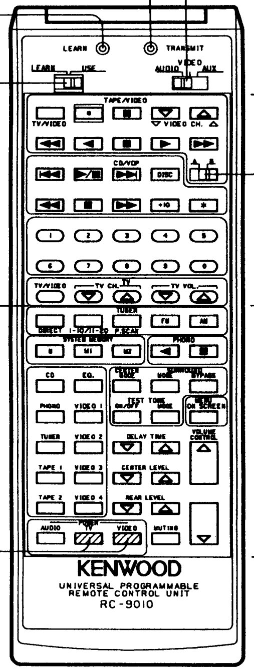
Names and Operation of Controls

Remote Control Operation Keys for KENWOOD Components

- These keys allow you to operate KENWOOD audio components connected to the main unit via the System Control cords, as well as the KENWOOD VCR and KENWOOD TV, from the remote control unit.

LEARN indicator

LEARN/USE select switch
Set to the USE position for normal operation.


LEARN
TRANSMIT
LEARN USE
VIDEO
AUDIO AUX
TAPE/VIDEO
TV/VIDEO
VIDEO CH.
CD/VDP
DISC
+10
TV/VIDEO
TV CH.
TV
TV VOL.
TUNER
FM
AM
DIRECT
P.SCAN
SYSTEM MEMORY
PHONO
M1
M2
CD
EQ.
CENTER MODE
SURROUND MODE
BYPASS
PHONO
VIDEO 1
TEST TONE
ON SCREEN
TUNER
VIDEO 2
DELAY TIME
VOLUME CONTROL
TAPE 1
VIDEO 3
CENTER LEVEL
TAPE 2
VIDEO 4
REAR LEVEL
AUDIO
POWER
VIDEO
MUTING
KENWOOD
UNIVERSAL PROGRAMMABLE REMOTE CONTROL UNIT
RC-9010

TRANSMIT indicator
Blinks when a remote control signal is transmitted.

AUDIO/VIDEO/AUX select switch

A/B select switch
Used when operating two tape decks or two VCRs separately. However, this switch does not function when the AUDIO/VIDEO/AUX select switch is set to the AUX position.

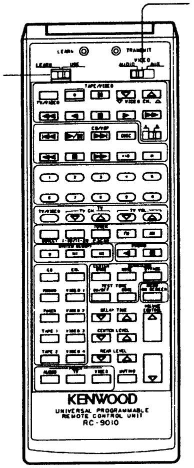
With the AUDIO/VIDEO/AUX select switch set to AUDIO or VIDEO, the various remote control functions of your audio/video components can be programmed under these keys.

With the AUDIO/VIDEO/AUX select switch set to AUX, the remote control functions of your audio/video components can be programmed under these keys.

These keys can be programmed regardless of the setting of the AUDIO/VIDEO/AUX select switch.

For the KR-V9010:
The keys on the remote control unit have the same functions as those on the front panel of the KR-V9010.

Key functions when remotely controlling KENWOOD audio components connected via System Control cords, KENWOOD VCR and KENWOOD TV


KENWOOD
UNIVERSAL PROGRAMMABLE REMOTE CONTROL UNIT
RC-9010

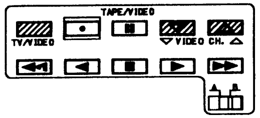
AUDIO/VIDEO/AUX select swith

LEARN/USE select switch
Set to the USE position.

If any of the following KENWOOD component models is used, this remote control unit cannot be used to control the CD manual search function or to make entries with the numeric keys (1 to 0 and +10):

DP-M97, DP-57, DP-47

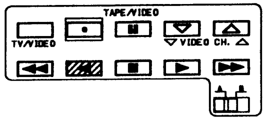
■ TAPE deck control keys


TAPE/VIDEO
TV/VIDEO
VIDEO CH.

When the AUDIO/VIDEO/AUX select switch is set to AUDIO, these keys function as the tape deck operation keys.
Use the A/B select switch to specify the A deck or B deck of a dual-transport cassette deck.
The darkened keys (marked " ■ ") do not function at this time.

Note:
When it is necessary to press the fast forward key after the rewind key, be sure to press the stop key before pressing the fast forward key.

■ VIDEO deck control keys

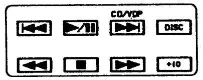

TAPE/VIDEO
TV/VIDEO
VIDEO CH.

When the AUDIO/VIDEO/AUX select switch is set to VIDEO, these keys function as VCR operation keys.
The darkened keys (marked " ■ ") do not function at this time.
When remotely controlling the KV-D957S from KENWOOD (for U.S.A. and military), set the A/B select switch to A.

VIDEO CH keys:
Pressing the △ key shifts the channel tuned on the VIDEO deck upward, and pressing the ▽ key shifts it downward.

TV/VIDEO key:
Every time this key is pressed, the output from the video deck is switched between the TV channel RF output and video output.

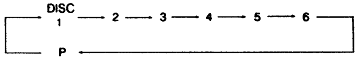
■ CD player control keys


CD/VDP
DISC
+10

When the AUDIO/VIDEO/AUX select switch is set to AUDIO:

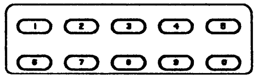
These keys allow the same operations as the keys with the same names on the CD player.

The DISC key is for use exclusively with a multiple CD player. Pressing the DISC key allows one of DISC 1 to DISC 6 to be selected in the following cycle.


DISC
1
2
3
4
5
6
P

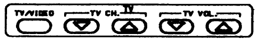
(DP-M6010 only)

■ Numeric keys (1 to 0)


1
2
3
4
5
6
7
8
9
0

1. When the CD or TUNER input selector key is selected, these keys can be used in place of the numeric keys on the CD player or receiver, respectively.
   - The AUDIO/VIDEO/AUX switch must be set to AUDIO.
2. When the AUDIO/VIDEO/AUX switch is set to VIDEO, the numeric keys can be used in place of the TV channel select keys.

■ TV set control keys

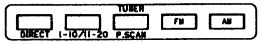

TV/VIDEO
TV CH.
TV
TV VOL.

When the AUDIO/VIDEO/AUX select switch is set to VIDEO, these keys funciton as follows:

TV VOL keys:
Pressing the [△] key increases the volume of the TV set, and pressing the [▽] key decreases it.
TV CH keys:
Pressing the [△] key shifts the channel tuned on the TV set upward, and pressing the [▽] key shifts it downward.
TV/VIDEO key:
Every time this key is pressed, the input to the TV set is switched between the TV signal and the external video signal.

The control keys in the following sections are concerned with the front panel operations of the KR-V9010, and function in the same way regardless of whether the AUDIO/VIDEO/AUX select switch is set to AUDIO or VIDEO.

■ TUNER control keys


TUNER
FM
AM
DIRECT
1-10/11-20
P.SCAN

These keys allow the same operations as the keys with the same names on the receiver.

■ Turntable (PHONO) control keys

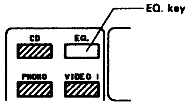
The Play (◀) and Stop (■) keys are provided.

■ System memory keys

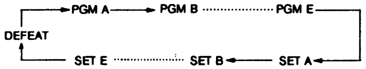
SYSTEM MEMORY
M
M1
M2

These keys allow the same operations as the keys with the same names on the receiver.

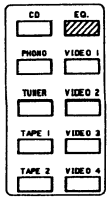
■ Equalizer key


EQ. key
CD
EQ.
PHONO
VIDEO 1

Every time the EQ key is pressed, the equalizer of this unit can be switched ON/DEFEAT or ten preset equalizer patterns can be changed over in the following cycle.

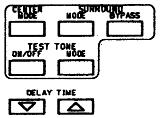

PGM A
PGM B
PGM E
DEFEAT
SET E
SET B
SET A

■ Input selector keys


CD
EQ.
PHONO
VIDEO 1
TUNER
VIDEO 2
TAPE 1
VIDEO 3
TAPE 2
VIDEO 4

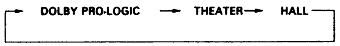
These keys have the same functions as the input selector keys on the receiver.

■ Surround keys


CENTER MODE
SURROUND
MODE
BYPASS
TEST TONE
ON/OFF
MODE
DELAY TIME

The CENTER MODE key, BYPASS key, and DELAY TIME key function in the same way as those on the front panel of the KR-V9010.

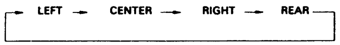
SURROUND MODE key:
Each time this key is pressed, the Surround mode changes in the following order:


DOLBY PRO-LOGIC
THEATER
HALL

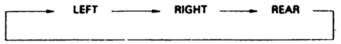
TEST TONE ON/OFF key:
Turns the test tone ON and OFF when the DOLBY PRO-LOGIC mode is selected.

TEST TONE MODE key:
Each time this key is pressed, the test tone output position is changed in the following order:

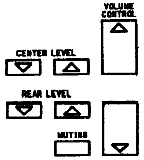
(NORMAL or WIDE mode)


LEFT
CENTER
RIGHT
REAR

(PHANTOM mode)


LEFT
RIGHT
REAR

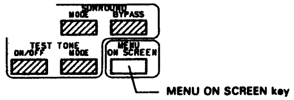
■ Volume level keys


VOLUME CONTROL
CENTER LEVEL
REAR LEVEL
MUTING

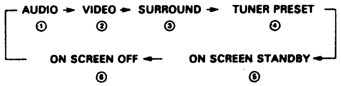
VOLUME CONTROL keys:
Pressing the [△] key rotates the VOLUME CONTROL on the main body of the receiver clockwise to increase the volume, and pressing the [▽] key rotates it counterclockwise to decrease the volume.

Other keys allow the same operations as the keys with the same names on the receiver.

■ MENU ON SCREEN key


SURROUND
MODE
BYPASS
TEST TONE
ON/OFF
MODE
MENU
ON SCREEN
MENU ON SCREEN key

Every time this key is pressed, the on-screen display modes are changed over in the following order:

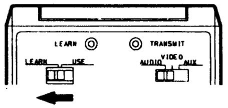

AUDIO ①
VIDEO ②
SURROUND ③
TUNER PRESET ④
ON SCREEN STANDBY ⑤
ON SCREEN OFF ⑥

■ POWER keys

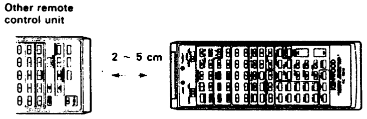
POWER
AUDIO
TV
VIDEO

AUDIO key:
Switches the power of the receiver to ON/STANDBY (OFF).
TV key:
Switches the power of the TV set to ON/STANDBY (OFF).
VIDEO key:
Swithces the power of the video deck to ON/STANDBY (OFF).

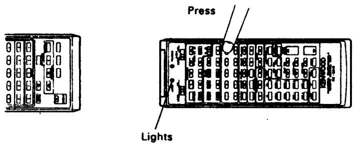
■ To program the remote control functions of other remote control units into the RC-9010:



1. Set the LEARN/USE select switch to the LEARN position, and set the AUDIO/VIDEO/AUX select switch to the desired position.

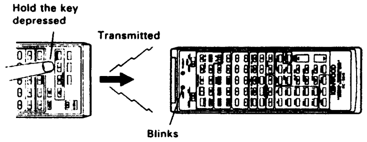


2. Place the RC-9010 and the other remote control unit so that their heads (transmission ends) face each other. (Leave a distance between the units of about 2 ~5 cm or 0.8 ~ 2 inches.)

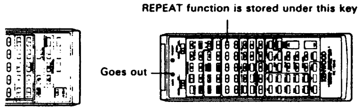


3. Press one of the learning keys on the RC-9010. The LEARN indicator will light.

Example: To program the REPEAT key of the other remote control unit



4. Press the key to be programmed on the other remote control unit and hold it depressed.



5. When the LEARN indicator on the RC-9010 blinks twice and then goes out, the programming operation is completed. When the programming operation is completed, release your finger from the key on the other remote control unit.

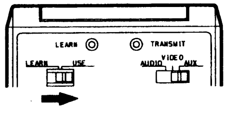
Note:
Be sure to hold the key to be programmed on the other remote control unit depressed until the LEARN indicator goes out.

- To program other remote control functions, repeat the procedure outlined in steps (3) to (5).

Most audio/video components use the same infrared remote control coding system. Therefore, the RC-9010 can memorize most of the functions of other remotely-controlled components. Please read this manual and the instruction manuals provided with your other A/V components carefully before programming the remote control functions of the other components.

Notes:
1. If the optical output level of the other remote control unit is high, programming may not be carried out correctly. If this occurs, separate the RC-9010 and the other remote control unit by a greater distance and perform the programming procedure again.
2. If the LEARN and TRANSMIT indicators blink simultaneously during programming, this indicates either that the key being programmed cannot be programmed or that programming has not been performed completely. If this occurs, perform the programming procedure again.
3. Remote control functions using specially-coded signals or signals other than infrared signals cannot be programmed. Programming is also impossible when the RC-9010's memory capacity becomes full.
4. The LEARN indicator goes out 30 seconds after a learning (programmable) key is pressed. After this, programming is impossible. To continue programming, press the learning (programmable) key again.
5. When two or more learning (programmable) keys are pressed at the same time, the remote control function of the other remote control unit will be stored under the key which was pressed last.
6. Do not program the remote control functions of equipment other than A/V components, such as air conditioners, etc.

■ To check the programmed contents during programming



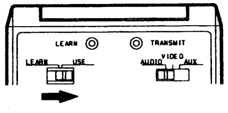
Set to USE.

1. Check that the LEARN/USE select switch is in the USE position.
2. Press the key to be checked.
3. Verify that the component to be operated works correctly.

■ To change the programmed contents

Perform the programming operation again. The previously programmed contents will be canceled automatically, and the newly programmed contents will be maintained in memory.

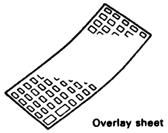
■ Normal operation of the remote control unit



Set to USE.

1. Set the LEARN/USE select switch to the USE position.
2. Press a key under which another remote control function has been programmed.
The TRANSMIT indicator blinks and the target component operates as intended.

■ Overlay sheet



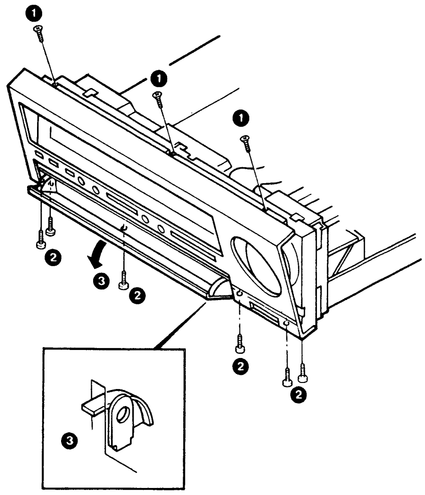
Overlay sheet

The provided overlay sheet offers a convenient way to record and recall the contents programmed under the various operation keys.
Write the programmed key contents on the overlay sheet with an oil-based felt-tipped marker or pencil. To erase, use a conventional eraser.

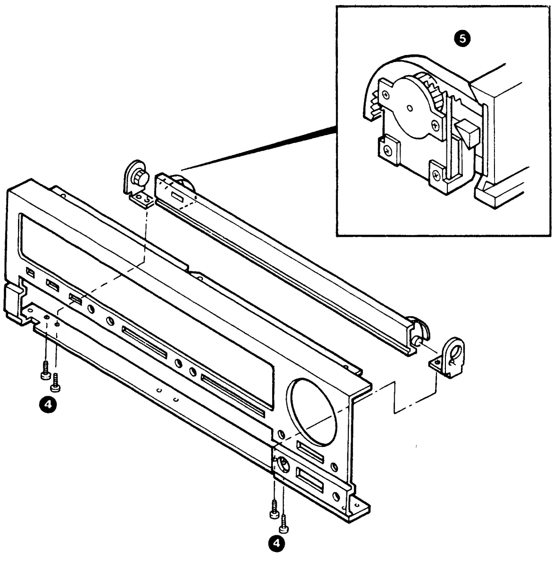
DISASSEMBLY FOR REPAIR

1. Removing the front panel ass'y

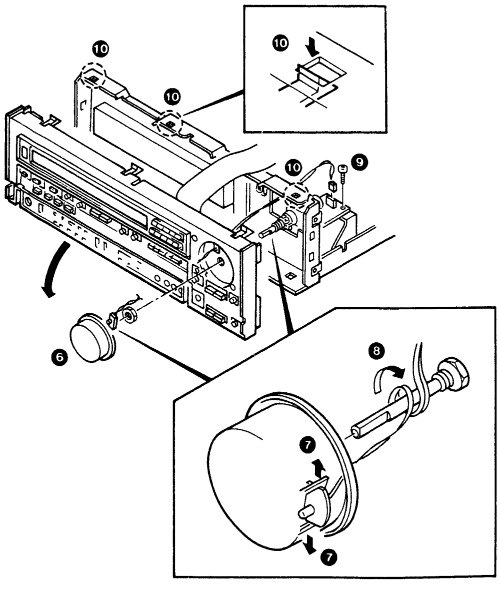
1. Remove the three screws in the upper side (❶).
2. Remove the six screws in the lower side (❷).
3. When removing, do not hit the damper (❸).



4. Remove the four screws (❹).
5. When installing, put gears into alignment as shown (❺).



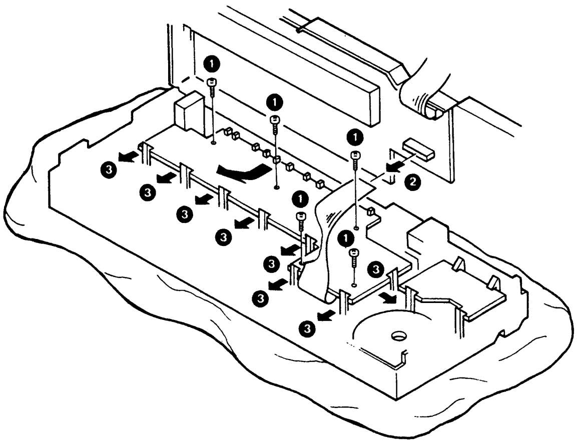
6. Detach the knob and its accompanying nut (❻).
7. Disconnect the LED VOL. board (❼).
8. When installing the knob, rotate the VOL. clockwise and set the cord as shown (❽).
9. When disconnecting the (X14-) (D/6) board, remove the one screw and disconnect the connector (❾).
10. Undo the three catches (❿).



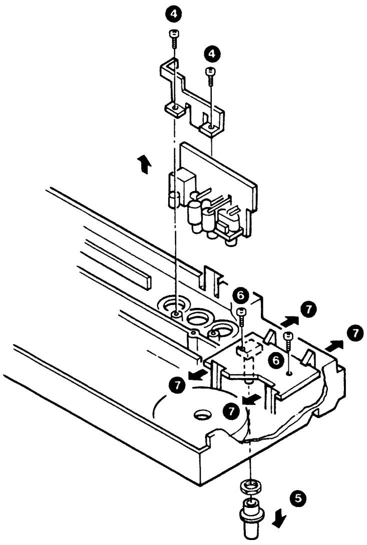
DISASSEMBLY FOR REPAIR

2. Removing the PC boards

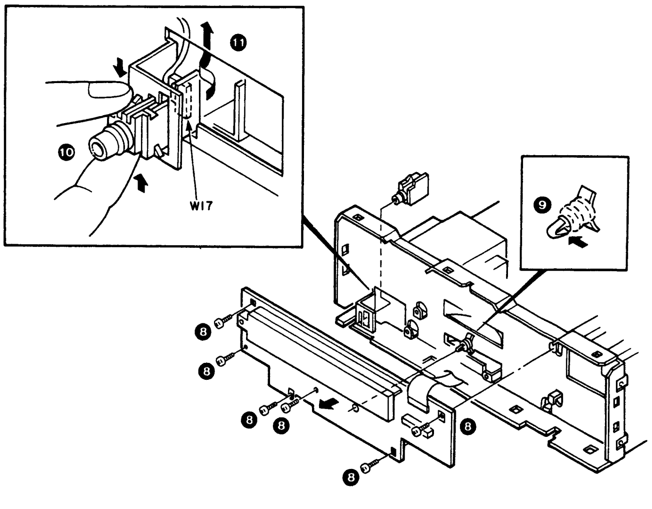
1. Remove the five screws (❶).
2. Disconnect the connector (❷).
3. Undo the eight catches (❸).



4. Remove the two screws (❹).
5. Detach the knob and its accompanying nut (❺).
6. Remove the two screws (❻).
7. Undo the four catches (❼).



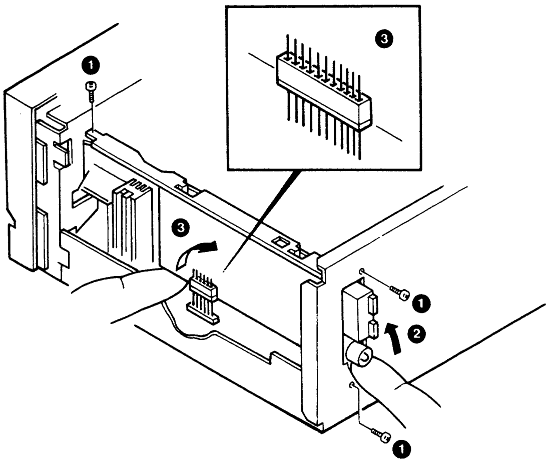
8. Remove the six screws (❽).
9. Detach the unit holder (❾).
10. Push the upper and lower catches (❿), then disconnect cord W17 pulling it lightly in the direction of the arrow (⓫).



DISASSEMBLY FOR REPAIR

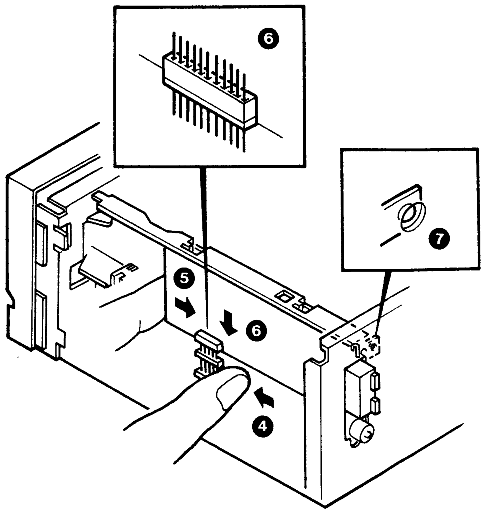
3. Removing the (X05-) (A/2) board

1. Remove the three screws (❶).
2. While pressing the ANT terminal (❷), disconnect the connector (❸).



4. Installing the (X05-) (A/2) board

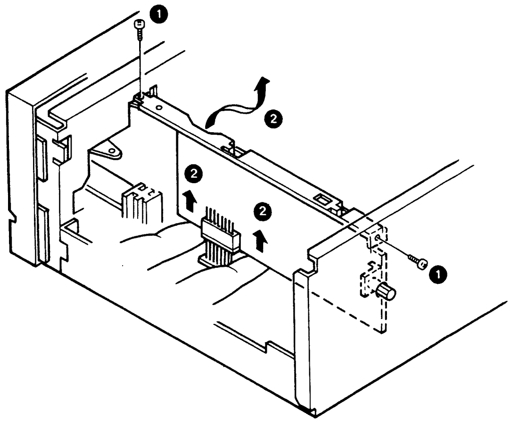
3. Place the board, and push the connector (❹).
4. Push the board (❺).
5. Put connector pins in alignment, then push the board from above (❻).
6. Set it to the recession (❼).



DISASSEMBLY FOR REPAIR

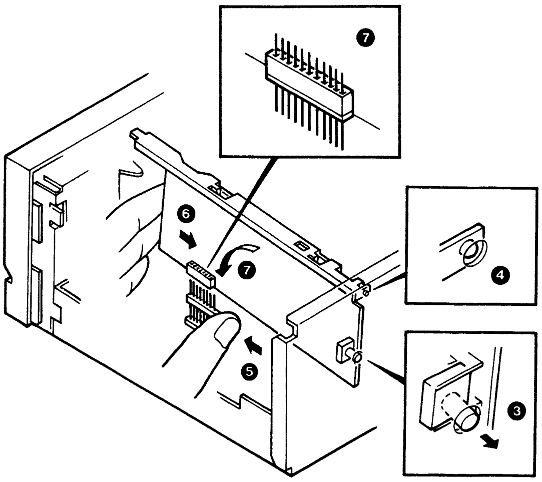
5. Removing the (X08-) (A/7) board

1. Remove the two screws (❶).
2. Disconnect the connector (❷).



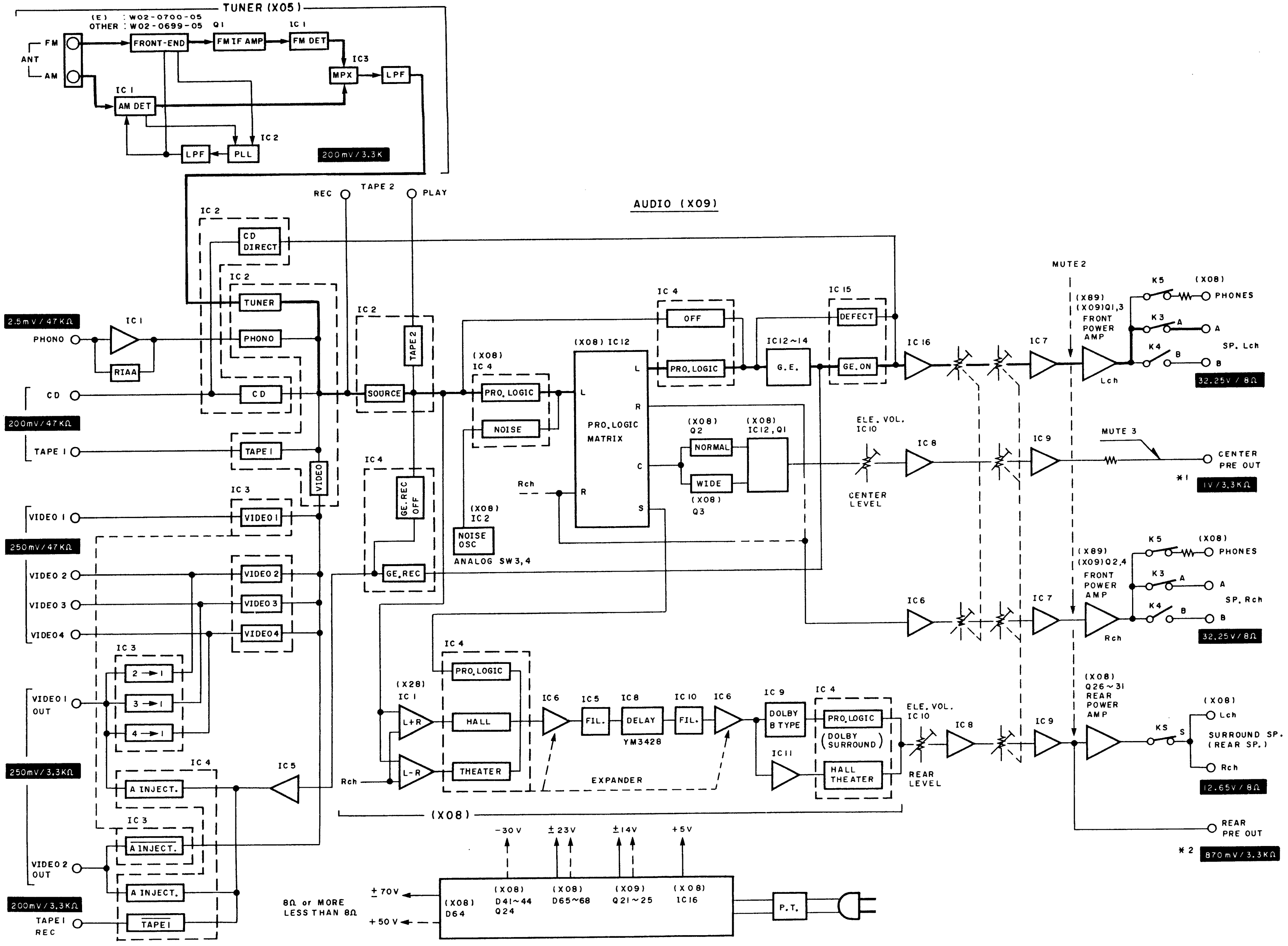
6. Installing the (X08-) (A/7) board

3. Insert the knob (❸).
4. Set it to the recession (❹).
5. Push the connector (❺).
6. Push the board (❻).
7. Put connector pins in alignment, then push the board from above (❼).

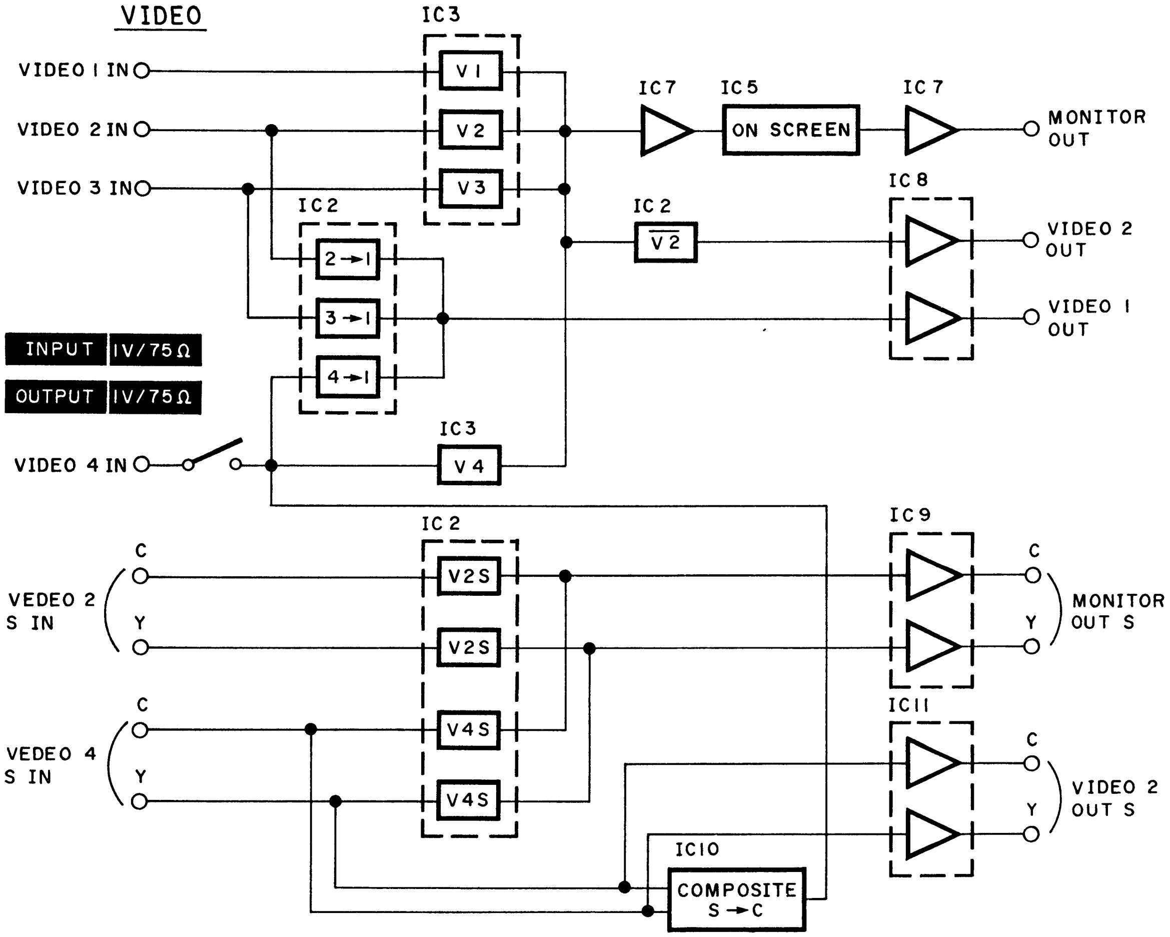


KR-V9010

BLOCK DIAGRAM


TUNER (X05)
(E) : W02-0700-05
OTHER : W02-0699-05
ANT
FM
AM
FRONT-END
Q1
FM IF AMP
IC 1
FM DET
IC3
MPX
LPF
IC 1
AM DET
IC 2
PLL
LPF
200mV / 3.3K
REC
TAPE 2
PLAY
AUDIO (X09)
IC 2
CD DIRECT
IC 2
TUNER
PHONO
CD
TAPE 1
IC 2
TAPE 2
SOURCE
VIDEO
IC 3
VIDEO 1
VIDEO 2
VIDEO 3
VIDEO 4
2.5mV / 47KΩ
PHONO
IC 1
RIAA
CD
200mV/47KΩ
TAPE 1
VIDEO 1
250mV/47KΩ
VIDEO 2
VIDEO 3
VIDEO4
IC 3
2 → 1
3 → 1
4 → 1
VIDEO 1 OUT
250mV/3.3KΩ
IC 4
A INJECT.
IC 3
A INJECT.
A INJECT.
TAPE 1
VIDEO 2 OUT
200mV/3.3KΩ
TAPE 1 REC
IC 5
IC 4
GE.REC OFF
GE.REC
(X08)
IC 4
PRO. LOGIC
NOISE
(X08)
IC 2
NOISE OSC
ANALOG SW 3,4
(X08) IC12
PRO. LOGIC MATRIX
L
R
C
S
Rch
IC 4
OFF
PRO. LOGIC
IC12~14
G.E.
IC 15
DEFECT
GE.ON
(X08)
Q2
NORMAL
WIDE
(X08)
Q3
(X08)
IC12, Q1
ELE. VOL.
IC10
CENTER LEVEL
IC 16
IC 8
IC 6
IC 7
IC 9
IC 7
MUTE 2
(X89)
(X09) Q1,3
FRONT POWER AMP
Lch
MUTE 3
K5
(X08)
PHONES
K3
A
K4
B
SP. Lch
32.25V / 8Ω
CENTER PRE OUT
*1
1V / 3.3KΩ
(X89)
(X09) Q2,4
FRONT POWER AMP
Rch
K5
(X08)
PHONES
K3
A
K4
B
SP. Rch
32.25V / 8Ω
(X28)
IC 1
L+R
L-R
Rch
IC 4
PRO. LOGIC
HALL
THEATER
IC 6
IC 5
FIL.
IC 8
DELAY
YM3428
IC 10
FIL.
IC 6
EXPANDER
IC 9
DOLBY B TYPE
IC 11
IC 4
PRO. LOGIC
(DOLBY SURROUND)
HALL THEATER
ELE. VOL.
IC 10
REAR LEVEL
IC 8
IC 9
(X08)
Q26~31
REAR POWER AMP
KS
S
(X08)
Lch
SURROUND SP. (REAR SP.)
Rch
12.65V / 8Ω
REAR PRE OUT
*2
870mV / 3.3KΩ
(X08)
-30V
±23V
±14V
+5V
±70V
+50V
8Ω or MORE
LESS THAN 8Ω
(X08)
D64
(X08)
D41~44
Q24
(X08)
D65~68
(X09)
Q21~25
(X08)
IC16
P.T.

BLOCK DIAGRAM


VIDEO
VIDEO 1 IN
VIDEO 2 IN
VIDEO 3 IN
IC3
V1
V2
V3
IC2
2→1
3→1
4→1
INPUT 1V/75Ω
OUTPUT 1V/75Ω
VIDEO 4 IN
IC3
V4
IC7
IC5
ON SCREEN
IC7
MONITOR OUT
IC2
V̄2
IC8
VIDEO 2 OUT
VIDEO 1 OUT
IC2
C
VEDEO 2 S IN
Y
V2S
V2S
C
VEDEO 4 S IN
Y
V4S
V4S
IC9
C
MONITOR OUT S
Y
IC11
C
VIDEO 2 OUT S
Y
IC10
COMPOSITE S→C

CIRCUIT DESCRIPTION

1. Description of components

1-1. TUNER UNIT (X05-381X-XX) 0-10 : K,P 0-81 : U,UE (JAPAN MADE)
(X05-353X-XX) 0-11 : K,P 0-82 : U,UE (SINGAPORE MADE)

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compativility
Q1	2SC1923(R,O)	FM IF amplifier	
Q2	2SC945(A)(Q,P)	LPF (Low Pss Filter)	Compatible with 2SC1740S(Q,R).
Q3	2SC1845(F,E)	LPF (Low Pss Filter)	
Q4	2SC945(A)(Q,P)	Buffer amplifier	For the E version only. Compatible with 2SC1740S(Q,R).
Q5, 6	2SC945(A)(Q,P)	Emphasis select	75μs when ON, 50μs when OFF. For the U, UE version only. Compatible with 2SC1740S(Q,R).
Q7, 8	2SA733(A)(Q,P)	+B power supply select	Q7 : FM +B (ON in FM mode), Q8 : AM +B (ON in AM mode). Compatible with 2SA933S(Q,R).
IC1	LA1265	FM IF/AM detection	
IC2	LM7001	PLL (Phase Locked Loop)	
IC3	AN7470	MPX (Multiplexer)	

1-2. PRE AMPLIFIER UNIT (X08-233X-XX) 0-10 : K 1-01 : P 0-81 : U,UE (JAPAN MADE)
(X08-230X-XX) 0-10 : K 1-01 : P 0-81 : U,UE (SINGAPORE MADE)

Ref. No	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1	2SC945(A)(Q,R)	Center OFF select	Turns ON when center OFF. Compatible with 2SC1740S(Q,R).
Q2	2SC2878(B)	Center mode select	Turns ON when normal mode. If Q2 and Q3 turns OFF
Q3	2SC2878(B)	Center mode select	Turns ON when wide mode. when fantom mode.
Q5	2SA733(A)(Q,P)	Test tone switching	Turns ON when test tone ON. Compatible with 2SA933S(Q,R).
Q21	2SD1302(S,T)	Relay drive	For the power relay.
Q22	2SC945(A)(Q,P)	CE control	Compatible with 2SC1740S(Q,R).
Q23	2SA733(A)(Q,P)	Filament ON/OFF	Compatible with 2SA933S(Q,R).
Q24	2SB722(Q,P)	Constant voltage circuit	For the –30V power supply.
Q25	2SA922(F,E)	Impedance detector	4Ω/8Ω detect.
Q26, 27	2SA922(F,E)	Referential amplifier	
Q28	2SC1845(F,E)	Pre drive	
Q29	2SC4137	Bias compensation	
Q30	2SD1893	Final transistor	
Q31	2SB1253	Final transistor	
Q32	2SC1845(F,E)	Current limiter	
Q33	2SA733(A)(Q,P)	Protection	Signal. Compatible with 2SA933S(Q,R).
Q34	2SC945(A)(Q,P)	Relay drive	Surround SP. Compatible with 2SC1740S(Q,R).
Q35	2SC945(A)(Q,P)	Relay drive	Speaker A. Compatible with 2SC1740S(Q,R).
Q36	2SC945(A)(Q,P)	Relay drive	Speaker B. Compatible with 2SC1740S(Q,R).
Q37	2SC945(A)(Q,P)	Relay drive	Phones. Compatible with 2SC1740S(Q,R).
IC1	NJM2058D	Buffer amplifier	
IC2	TC4011UBP	Test tone	Test tone noise oscillator.
IC3	NJM2058D	Test tone	Test tone noise oscillator.
IC4	TC9162N	Analog switch array	
IC5	NJM4565L	LPF	7kHz low pass filter.
IC6	μPC1571C	Analog compounder	
IC7	NJM78L05A	Constant voltage circuit	For the +5V power supply.
IC8	YM3428	Digital delay	
IC9	LA2730	Dolby B type NR IC	
IC10	NJM072BL	LPF	7kHz low pass filter.
IC11	NJM4565L	Buffer amplifier	For the output.
IC12	LA2770	PRO LOGIC IC	
IC16	μPC7805HF	Constant voltage circuit	For the +5V power supply.
IC17	μPC78L12J	Constant voltage circuit	For the +12V power supply.

CIRCUIT DESCRIPTION

1-3. AUDIO UNIT (X09-285X-XX) 0-10 : K,U,UE 1-01 : P (JAPAN MADE)
(X09-293X-XX) 0-10 : K,U,UE 1-01 : P (SINGAPORE MADE)

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1, 2	2SC2922*5	Main amplifier final stage	
Q3, 4	2SA1216*5	Main amplifier final stage	
Q5, 6	2SC4137	Bias compensation	
Q7, 8	2SC2878(B)	Muting	
Q9, 10	2SC2878(B)	Muting	For the main input.
Q11, 13	2SC2878(B)	Muting	For the rear input.
Q12, 14	2SC2878(B)	Muting	For the center input.
Q21	2SD1266	Constant voltage circuit	For the +15V power supply.
Q22	2SC945(A)(Q,P)	Constant voltage circuit	For the +15V power supply. Compatible with 2SC1740S(Q,R).
Q23, 24	2SD1266	Constant voltage circuit	For the –15V power supply.
Q25	2SA733(A)(Q,P)	Constant voltage circuit	For the –15V power supply. Compatible with 2SA933S(Q,R).
Q26	2SC945(A)(Q,P)	Constant voltage circuit	For the +15V power supply. Compatible with 2SC1740S(Q,R).
Q27	2SA733(A)(Q,P)	Constant voltage circuit	For the –15V power supply. Compatible with 2SA933S(Q,R).
Q28	2SD1266	Constant voltage circuit	For the motor VR +12V power supply.
Q29	2SC2003(L,K)	Ripple filter	For the tuner +5V.
Q30	2SA733(A)(Q,P)	Muting control	High mute. Compatible with 2SA933S(Q,R).
Q32	2SA733(A)(Q,P)	Muting control	Low mute. Compatible with 2SA933S(Q,R).
Q34, 35	2SA945(A)(Q,P)	IC control	For the IC15. Compatible with 2SC1740S(Q,R).
Q36, 37	2SA733(A)(Q,P)	IC control	For the IC15. Compatible with 2SA933S(Q,R).
Q38	2SA733(A)(Q,P)	Muting control	Low mute. Compatible with 2SA933S(Q,R).
IC1	μPC4570C-A	Phono equalizer amplifier	
IC2	TC9164N	Input select	
IC3, 4	TC9163N	Input select	
IC5	NJM4558D	Buffer amplifier	For the REC OUT signal.
IC6, 7	μPC4570C-A	Buffer amplifier	
IC8, 9	NJM4558D	Buffer amplifier	
IC10	TC9176P	Electronic volume	Rear center volume.
IC11	NJM4558D	Buffer amplifier	For the electronic volume.
IC12	LC7522	Electronic volume array	For the GE (Graphic equalizer) volume.
IC13, 14	M5229P	OP amplifier	For the GE.
IC15	LC4966	Selector	GE ON/OFF.
IC16	NJM4558D	Mixing amplifier	For the spectrum analyzer.

1-4. SUB UNIT (X13-6370-10) (JAPAN MADE)
(X13-6250-10) (SINGAPORE MADE)

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1	2SD882(Q,P)	Constant voltage circuit	For the +5V power supply.
Q2	2SB772(Q,P)	Constant voltage circuit	For the –5V power supply.
Q3	2SC945(A)(Q,P)	Synchronize separator	Compatible with 2SC1740S(Q,R).
Q4	2SA733(A)(Q,P)	Synchronize separator	Compatible with 2SA933S(Q,R).
Q5	2SC945(A)(Q,P)	Buffer amplifier	Compatible with 2SC1740S(Q,R).
Q6	2SC945(A)(Q,P)	Vertical detector	With buffer amplifier. Compatible with 2SC1740S(Q,R).
Q7	2SC945(A)(Q,P)	Horizontal detector	With buffer amplifier. Compatible with 2SC1740S(Q,R).
Q8	2SD882(Q,P)	Constant voltage circuit	For the +5V power supply.
Q9	2SB772(Q,P)	Constant voltage circuit	For the –5V power supply.
IC1	μPA80C	Level converter	0V → +5V, +5V → –5V. Active low.
IC2~4	μPD4066BC	Video selector	When +5V, switch on.
IC5	MB88323A-K2	On screen IC	
IC6	μPD4069UBC	Inverter	
IC7~11	MC14577A	Video amplifier	

CIRCUIT DESCRIPTION

1-5. DISPLAY UNIT (X14-2560-10) (JAPAN MADE) (X14-2700-10) (SINGAPORE MADE)

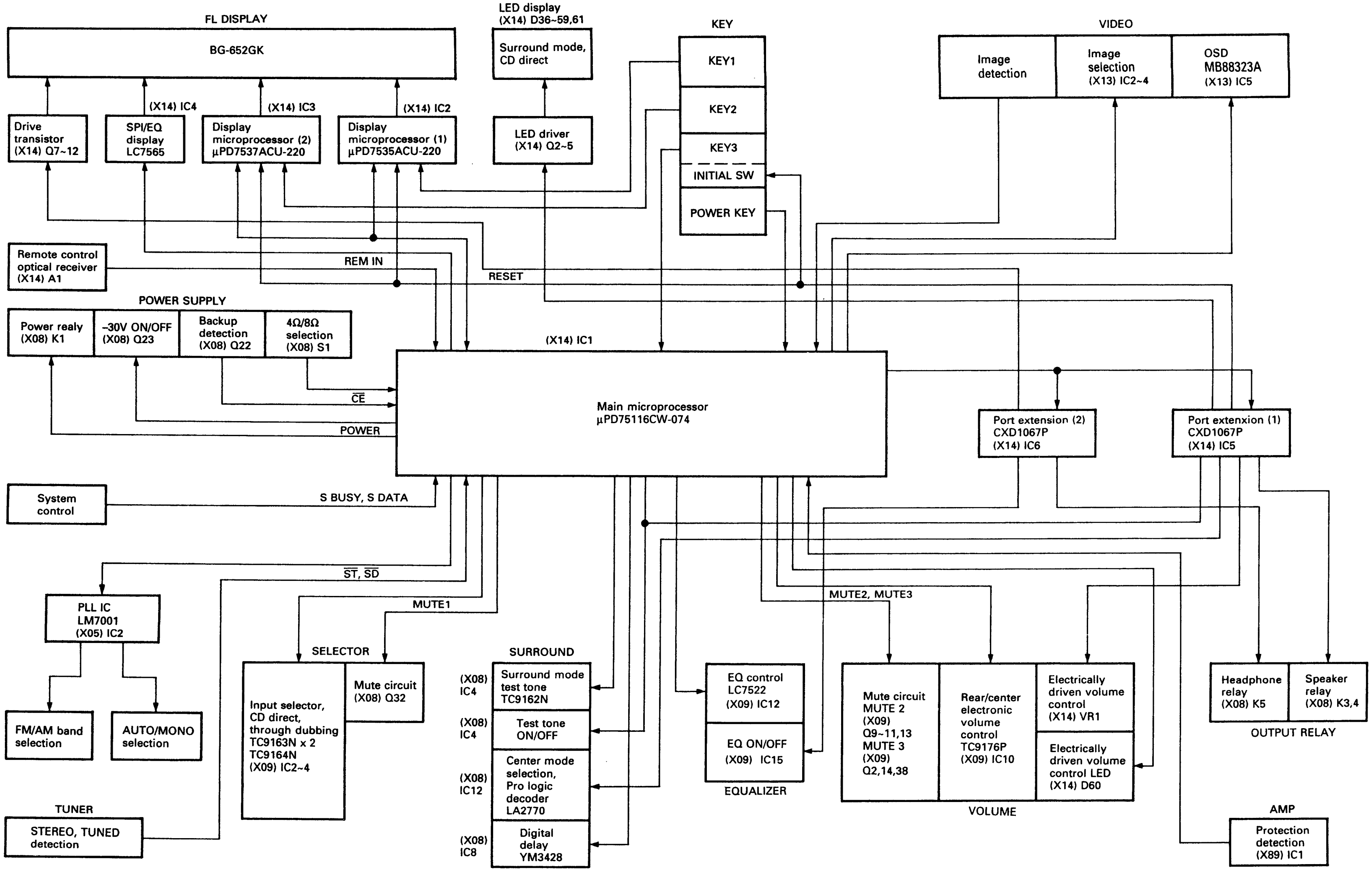
Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1	2SC945(A)(Q,P)	Reset circuit	Compatible with 2SC1740S(Q,R).
Q2	2SC945(A)(Q,P)	LED driver circuit	Dolby pro logic. Compatible with 2SC1740S(Q,R).
Q3	2SC945(A)(Q,P)	LED driver circuit	Theater. Compatible with 2SC1740S(Q,R).
Q4	2SC945(A)(Q,P)	LED driver circuit	Hall. Compatible with 2SC1740S(Q,R).
Q5	2SC945(A)(Q,P)	LED driver circuit	CD direct. Compatible with 2SC1740S(Q,R).
Q6	2SC945(A)(Q,P)	LED driver circuit	Volume. Compatible with 2SC1740S(Q,R).
Q7	2SA733(A)(Q,P)	FIP dirver	Equalizer "ON". Compatible wuth 2SA933S(Q,R).
Q8	2SA733(A)(Q,P)	FIP driver	Video monitor "4". Compatible with 2SA933S(Q,R).
Q9	2SA733(A)(Q,P)	FIP driver	Video monitor "3". Compatible with 2SA933S(Q,R).
Q10	2SA733(A)(Q,P)	FIP driver	"CENTER". Compatible with 2SA933S(Q,R).
Q11	2SA733(A)(Q,P)	FIP dirver	"REAR". Compatible with 2SA933S(Q,R).
Q12	2SC945(A)(Q,P)	FIP driver	FIP grid current buffer. Compatible with2SC1740S(Q,R).
Q13, 14	DTC124ES	FIP driver	FIP grid current buffer.
IC1	µPD75116CW-074	Microprocessor	Main microprocessor.
IC2, 3	µPD7537ACU-220	Microprocessor	Sub microprocessor, FIP driver and key loading.
IC4	LC7565	FIP driver	GE, spectrum analyzer and rear/center volume level diaplsy driver.
IC5, 6	CXD1067P	I/O port	FIP/LED/Relay driver. For the volume motor and pro logic IC control.
IC7	LB1641	Motor driver	
IC8, 9	NJM2058D	OP amplifier	Spectrum analyzer filter. Compatible with µPC4574C.

1-6. MAIN AMPLIFIER UNIT (X89-109X-XX) 0-10 : K,U,UE 1-01 : P (JAPAN MADE) (X89-110X-XX) 0-10 : K,U,UE 1-01 : P (SINGAPORE MADE)

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1~4	2SC1845(F,E)	1st stage voltage amp	
Q5~8	2SC945(A)(Q,P)	1st stage cascode amp	Compatible with 2SC1740S(Q,R).
Q9~12	2SC1845(F,E)	2nd stage voltage amp	
Q13~16	2SA1123(R,S)	3rd stage voltage amp	
Q17, 18	2SA1123(R,S)	3rd stage cascode amp	
Q19, 20	2SC2631(R,S)	3rd stage current mirror	
Q21, 22	2SC3944(Q,R)	Power amplifier driver	
Q23, 24	2SA1535(Q,R)	Power amplifier driver	
Q25, 26	2SC2631(R,S)	Protector, current detector	Positive (+) side.
Q27, 28	2SA992(F,E)	Protector, current detector	Negative (–) side.
Q29	2SA992(F,E)	Protector	Transmits the current detected signal to IC1.
IC1	µPC1237HA	Protector	Relay drive.

CIRCUIT DESCRIPTION

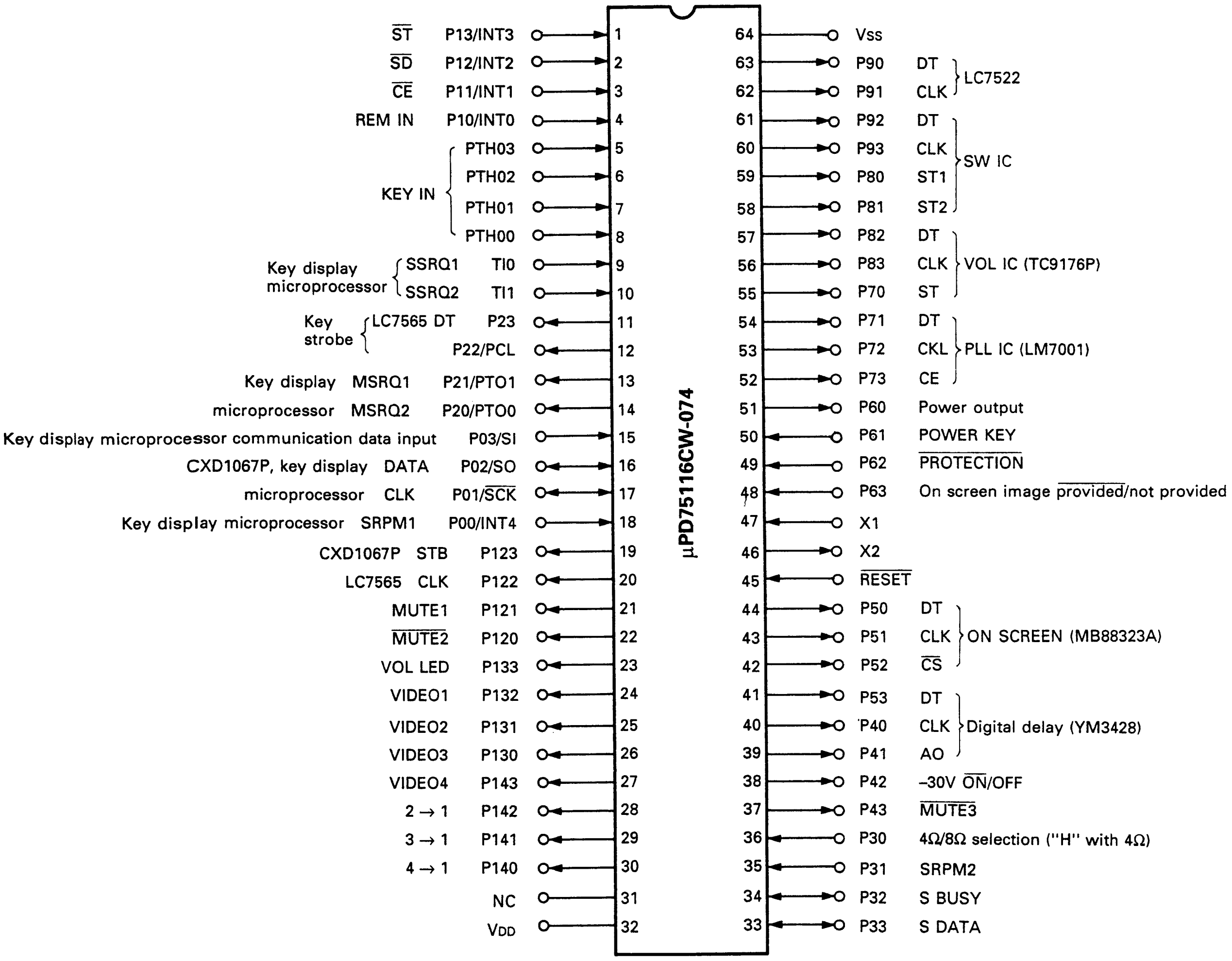
2. Microprocessor peripheral block diagram


FL DISPLAY
BG-652GK
LED display (X14) D36~59,61
Surround mode, CD direct
KEY
KEY1
KEY2
KEY3
INITIAL SW
POWER KEY
VIDEO
Image detection
Image selection (X13) IC2~4
OSD MB88323A (X13) IC5
Drive transistor (X14) Q7~12
(X14) IC4
SPI/EQ display LC7565
(X14) IC3
Display microprocessor (2) µPD7537ACU-220
(X14) IC2
Display microprocessor (1) µPD7535ACU-220
LED driver (X14) Q2~5
Remote control optical receiver (X14) A1
REM IN
RESET
POWER SUPPLY
Power realy (X08) K1
-30V ON/OFF (X08) Q23
Backup detection (X08) Q22
4Ω/8Ω selection (X08) S1
(X14) IC1
CE
POWER
Main microprocessor µPD75116CW-074
Port extension (2) CXD1067P (X14) IC6
Port extenxion (1) CXD1067P (X14) IC5
System control
S BUSY, S DATA
ST, SD
PLL IC LM7001 (X05) IC2
MUTE1
MUTE2, MUTE3
FM/AM band selection
AUTO/MONO selection
TUNER
STEREO, TUNED detection
SELECTOR
Input selector, CD direct, through dubbing TC9163N x 2 TC9164N (X09) IC2~4
Mute circuit (X08) Q32
SURROUND
(X08) IC4
Surround mode test tone TC9162N
(X08) IC4
Test tone ON/OFF
(X08) IC12
Center mode selection, Pro logic decoder LA2770
(X08) IC8
Digital delay YM3428
EQ control LC7522 (X09) IC12
EQ ON/OFF (X09) IC15
EQUALIZER
Mute circuit MUTE 2 (X09) Q9~11,13 MUTE 3 (X09) Q2,14,38
Rear/center electronic volume control TC9176P (X09) IC10
Electrically driven volume control (X14) VR1
Electrically driven volume control LED (X14) D60
VOLUME
Headphone relay (X08) K5
Speaker relay (X08) K3,4
OUTPUT RELAY
AMP
Protection detection (X89) IC1

CIRCUIT DESCRIPTION

3. Main microprocessor : μPD75116CW-074 (X14- : IC1)

3-1. Terminal connection diagram


μPD75116CW-074
ST P13/INT3 1
SD P12/INT2 2
CE P11/INT1 3
REM IN P10/INT0 4
KEY IN PTH03 5
PTH02 6
PTH01 7
PTH00 8
Key display microprocessor SSRQ1 TI0 9
SSRQ2 TI1 10
Key strobe LC7565 DT P23 11
P22/PCL 12
Key display MSRQ1 P21/PTO1 13
microprocessor MSRQ2 P20/PTO0 14
Key display microprocessor communication data input P03/SI 15
CXD1067P, key display DATA P02/SO 16
microprocessor CLK P01/SCK 17
Key display microprocessor SRPM1 P00/INT4 18
CXD1067P STB P123 19
LC7565 CLK P122 20
MUTE1 P121 21
MUTE2 P120 22
VOL LED P133 23
VIDEO1 P132 24
VIDEO2 P131 25
VIDEO3 P130 26
VIDEO4 P143 27
2 → 1 P142 28
3 → 1 P141 29
4 → 1 P140 30
NC 31
VDD 32
64 Vss
63 P90 DT
62 P91 CLK
LC7522
61 P92 DT
60 P93 CLK
59 P80 ST1
58 P81 ST2
SW IC
57 P82 DT
56 P83 CLK
55 P70 ST
VOL IC (TC9176P)
54 P71 DT
53 P72 CKL
52 P73 CE
PLL IC (LM7001)
51 P60 Power output
50 P61 POWER KEY
49 P62 PROTECTION
48 P63 On screen image provided/not provided
47 X1
46 X2
45 RESET
44 P50 DT
43 P51 CLK
42 P52 CS
ON SCREEN (MB88323A)
41 P53 DT
40 P40 CLK
39 P41 AO
Digital delay (YM3428)
38 P42 -30V ON/OFF
37 P43 MUTE3
36 P30 4Ω/8Ω selection ("H" with 4Ω)
35 P31 SRPM2
34 P32 S BUSY
33 P33 S DATA

3-2. Key matrix

O / I	P22 (57)	P23 (56)	INISW1	INISW2
PTH03 (5)		CD DIRECT	SPI 0 : Not provided 1 : Provided	Upper limit of reception of AM 10kHz. 0 : 1610kHz 1 : 1700kHz
PTH02 (6)	REAR LEVEL DOWN	M-1	SURROUND TYPE 0 : DOLBY 1 : PRO LOGIC	JBAND 0 : Not provided 1 : Provided
PTH01 (7)	REAR LEVEL UP	M-2	Remote control selection 0 : Unified 1 : Learning	VIDEO INPUT 0 : System 3 1 : Sustem 4
PTH00 (8)	MUTE	SYSTEM MEMORY	–	IBAND 0 : K 1 : E

Tact switch (P22, P23) — Initial setting diode matrix (INISW1, INISW2)

CIRCUIT DESCRIPTION

3-3. Explanation of terminals

Pin No.	Pin name	I/O	Symbol	Description
1	P13/INT3	I	$\overline{\text{ST}}$	Stereo signal input pin. With the TUNER position. with the selector set at "TUNER", when this pin is "L", "STEREO" is displayed.
2	P12/INT2	I	$\overline{\text{SD}}$	Broadcasr station existence.nonexistence detection signal input pin, which is used for auto tuning or programmed scan. At "L", "TUNED" is displayed. "H" : With station, "L" : Without station.
3	P11/INT1	I	$\overline{\text{CE}}$	Backup detection pin. At "L", the backup mode is engaged to stop the clock.
4	P10/INT0	I	REM IN	Pin to input the signal resultant from detecting the remote control signal. Normally or when reading leader codes, the level is detected. When reading data codes, an interrupt is applied at its fall for detection.
5~8	PTH03~PTH00	I	KEY IN	Microprocessor key matrix signal input pins. Normally "L" (Threshold voltage > V_{DD} x 7.5/16) (Exchange time = 32.3μs)
9	TI0	I	SSRQ1	Pin to input the communication request signal from display microprocessor (1). Normally "L", and "H" with communication request (when a pertinent key of display microprocessor (1) is pressed.)
10	TI1	I	SSRQ2	Pin to input the communication request signal from display microprocessor (2). Normally "L", and "H" with communication request (when a pertinent key of display microprocessor (2) is pressed.)
11	P23	O (CMOS)	LC7565 DT Key strobe	Pin to output the DT signal to graphic equalizer IC LC7565. Main microprocessor key matrix strobe signal pin. Normally "L", and "H" when key is taken in.
12	P22/PCL	O (CMOS)	Key strobe	Main microprocessor key matrix strobe signal pin. Normally "L", and "H" when key is taken in.
13	P21/PTO1	O (CMOS)	MSRQ1	Pin to output the communication request signal from the main microprocessor to display microprocessor (1). Normally "L", and "H" with communication request (per 8 bits.) During power ON, pulse is output to transfer display data at all times. (Refer to the communication format for between master and slave.)
14	P20/PTO0	O (CMOS)	MSRQ2	Pin to output the communication request signal from the main microprocessor ro display microprocessor (2). Same as MSRQ1 for the rest.
15	P03/SI	I		Display microprocessor (1), (2) communication data input pin, to which the status data of the key matrix of each display microprocessor is input.
16	P02/SO	I/O		Data output pin of port extension IC CXD1067P and display microprocessors (1) and (2).
17	P01/$\overline{\text{SCK}}$	I/O		Clock output pin of port extension IC CXD1067P and display microprocessors (1) and (2). Normally "H". During power ON, pulse is output to transfer display data at all times.
18	P00/INT4	I	SRPM1	Pin to input the communication acknowledge signal from display microprocessor (1).
19	P123	O (N-ch open drain)	CXD1067P STB	Port extension IC CXD1067P latch signal output pin. Normally "L", and latch at "H".
20	P122	O (N-ch open drain)	LC7565 CLK	Pin to output the clock signal to graphic equalizer display IC LC7565. Normally "L".
21	P121	O (N-ch open drain)	MUTE1	Pin to output a muting signal in input selection or during tuner scanning, etc. Normally "L", and active "H".
22	P120	O (N-ch open drain)	$\overline{\text{MUTE2}}$	Pin to output a muting signal for audio muting or for such a selection as TAPE2 ON/OFF, EQ ON/OFF, EQ REC ON/OFF, etc. Normally "L", and active "H".
23	P133	O (N-ch open drain)	VOL LED	Electrically driven volume control point indicator. Normally "H" (LED lights ON.) LED lights ON 4sec at power ON and flickers in ON/OFF interval of 500msec during muting. LED flickers in ON/OFF intervals of 64msec while volume is turned up or down by an electrically driven volume control from the remote control.

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Symbol	Description
24~26	P132~P130	O (N-ch open drain)	VIDEO1~VIDEO3	Pins to control the video monitor and the video REC output of VIDEO1/VIDEO2. Through dubbing is also involved.
27	P143		VIDEO4	
28	P142		2 → 1	
29	P141		3 → 1	
30	P140		4 → 1	

Status			Port status						
Model	Video monitor	Through dubbing status	VIDEO1	VIDEO2	VIDEO3	VIDEO4	2 → 1	3 → 1	4 → 1
KR-V9010	VIDEO1	OFF	0	1	1	1	1	1	1
		2 → 1	0	1	1	1	0	1	1
		3 → 1	0	1	1	1	1	0	1
		4 → 1	0	1	1	1	1	1	0
	VIDEO2	OFF	1	0	1	1	0	1	1
		2 → 1	1	0	1	1	0	1	1
		3 → 1	1	0	1	1	1	0	1
		4 → 1	1	0	1	1	1	1	0
	VIDEO3	OFF	1	1	0	1	1	0	1
		2 → 1	1	1	0	1	0	1	1
		3 → 1	1	1	0	1	1	0	1
		4 → 1	1	1	0	1	1	1	0
	VIDEO4	OFF	1	1	1	0	1	1	0
		2 → 1	1	1	1	0	0	1	1
		3 → 1	1	1	1	0	1	0	1
		4 → 1	1	1	1	0	1	1	0
KR-V8010	VIDEO1	OFF	1	0	0	0	0	0	1
		2 → 1	1	0	0	0	1	0	0
		3 → 1	1	0	0	0	0	1	0
	VIDEO2	OFF	0	1	0	0	0	0	1
		2 → 1	0	1	0	0	1	0	0
		3 → 1	0	1	0	0	0	1	0
	VIDEO3	OFF	0	0	1	0	0	0	1
		2 → 1	0	0	1	0	1	0	0
		3 → 1	0	0	1	0	0	1	0

Pin No.	Pin name	I/O	Symbol	Description
31	NC			
32	V_{DD}			Microprocessor power supply pin.
33	P33	I/O (CMOS)	SDATA	System serial communication DATA signal I/O pin. Normally, input mode is engaged. Only when serial data is output, output mode is engaged.
34	P32	I/O (CMOS)	SBUSY	System serial communication BUSY signal I/O pin. Normally, input mode is engaged. Only when serial data is output, output mode is engaged.
35	P31	I	SRPM2	Pin to input the communication acknowledge signal from display microprocessor (2).
36	P30	I	4Ω/8Ω selection	Transformer tap selection switch input pin. "H" : 4Ω, "L" : 8Ω
37	P43	O (CMOS)	$\overline{\text{MUTE3}}$	CENTER REC OUT muting pin. Only for Normal or Wide mode of PRO LOGIC. Normally "L". Pulse is output in such a selection as TAPE2 ON/OFF, EQ ON/OFF, etc.
38	P42	O (CMOS)	-30V $\overline{\text{ON}}$/OFF	Pin to output the control signal to turn ON/OFF -30V of FL power to light the EQ/SPI display and other sections of the FL display concurrently. AN "H" signal is output about 500ms later after the power supply pin becomes "H".
39	P41	O (CMOS)	YM3428 AO	Digital delay IC YM3428 control signal output pins.
40	P40		YM3428 CLK	
41	P53		YM3428 DT	

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Symbol	Description
42	P52	O (CMOS)	MB88323A $\overline{\text{CS}}$	OSD IC MB88323A control signal output pins.
43	P51		MB88323A CLK	
44	P50		MB88323A DT	
45	$\overline{\text{RESET}}$			Microprocessor reset input pin. Normally "H".
46	X2	O		System clock oscillation pins (4.194MHz).
47	X1	I		
48	P63	I		OSD video signal existence/nonexistence detection input pin. "H" : Nonexistence, "L" : Existence. At "H" (nonexistence), the screen goes blue.
49	P62	I	$\overline{\text{PROTECTION}}$	Pin to input the protection signal detection when speaker is shorted. During power ON, when this pin becomes "L", the speaker relay is turned off and "PROTECTION" is displayed. At this time, any other key than the power key is invalid.
50	P61	I	POWER KEY	Power key input pin. "H" with key ON.
51	P60	O (CMOS)	POWER	Power relay control output pin. "H" : Power ON, "L" : Power OFF.
52	P73	O (CMOS)	LM7001 CE	PLL IC LM7001 control signal output pins.
53	P72		LM7001 CLK	
54	P71		LM7001 DT	
55	P70	O (CMOS)	TC9176P ST	Electronic volume control IC TC9176P control signal output pins.
56	P83		TC9176P CLK	
57	P82		TC9176P DT	
58	P81	O (CMOS)	ST2	Function switch IC control signal output pins. One TC9162N, one TC9164N and two TC9163N's are controlled by these four pins. CLK and DT are common to each IC. ST1 is used for TC9162N, TC9163N's and TC9164N. ST2 is used for TC9163N (IC4).
59	P80		ST1	
60	P93		CLK	
61	P92		DT	
62	P91	O (CMOS)	LC7522 CLK	EQ IC LC7522 control signal output pins.
63	P90		LC7522 DT	
64	Vss			GND pin.

3-4. Port extension IC : CXD1067P (X14- : IC5, 6)

• Pin assignment of IC5

Output pins	P1 (1)	P2 (2)	P3 (3)	P4 (4)	P5 (5)	P6 (6)
Description	Speaker A relay	Speaker B relay	Electrically driven volume control volume up	Electrically driven volume control volume down	INI SW1 display micro-processor reset	INI SW2
Output pins	P7 (7)	P8 (8)	P9 (9)	P10 (11)	P11 (12)	P12 (13)
Description	Rear speaker relay	TEST TONE ON/OFF	CENTER ON/OFF	NORMAL MODE	WIDE MODE	-

• Pin assignment of IC6

Output pins	P1 (1)	P2 (2)	P3 (3)	P4 (4)	P5 (5)	P6 (6)
Description	FL "V4" display	FL "V3" display	FL "ON" display	FL "CENTER" display	FL "REAR" display	Headphone realy
Output pins	P7 (7)	P8 (8)	P9 (9)	P10 (11)	P11 (12)	P12 (13)
Description	EQ OFF	EQ ON	DOLBY PRO LOGIC LED	THEATER LED	HALL LED	CD DIRECT LED

CIRCUIT DESCRIPTION

• Explanation of terminals (IC5)

<table>
<tr><th>Pin No.</th><th>Pin name</th><th>I/O</th><th>Symbol</th><th>Description</th></tr>
<tr><td>1</td><td>P1</td><td>O</td><td>SPA</td><td>Speaker relay A control pin. ON : "H", OFF : "L"</td></tr>
<tr><td>2</td><td>P2</td><td>O</td><td>SPB</td><td>Speaker relay B control pin. ON : "H", OFF : "L"</td></tr>
<tr><td>3</td><td>P3</td><td>O</td><td>VOL UP</td><td>Electrically driven volume control volume up signal. Active "H"</td></tr>
<tr><td>4</td><td>P4</td><td>O</td><td>VOL DOWN</td><td>Electrically driven volume control volume down signal. Actve "H"</td></tr>
<tr><td>5</td><td>P5</td><td>O</td><td>INISW1</td><td>Initial setting switch take-in strobe signal.
Display microprocessor reset signal (Temporarily "H" at power ON).</td></tr>
<tr><td>6</td><td>P6</td><td>O</td><td>INISW2</td><td>Initial setting switch take-in strobe signal.</td></tr>
<tr><td>7</td><td>P7</td><td>O</td><td>REAR SP</td><td>Rear speaker relay control signal. ON : "H", OFF : "L"</td></tr>
<tr><td>8</td><td>P8</td><td>O</td><td>TEST TONE $\overline{\text{ON}}$/OFF</td><td>PRO LOGIC test tone ON/OFF control signal. ON : "L", OFF : "H"</td></tr>
<tr><td>9</td><td>P9</td><td>O</td><td>CENTER $\overline{\text{ON}}$/OFF</td><td rowspan="3">Three pins P9~P11 make outputs as follows, according to the internal CENTER mode status of the microprocessor with power ON independent of a SURROUND mode or the status of the SURROUND bypass.
<table>
<tr><th>CENTER mode \ Pin</th><th>NORMAL</th><th>WIDE</th><th>CENTER OFF</th></tr>
<tr><td>NORMAL</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>WIDE</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>PHANTOM</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>CENTER OFF</td><td>0</td><td>0</td><td>1</td></tr>
</table></td></tr>
<tr><td>11</td><td>P10</td><td>O</td><td>NORMAL</td></tr>
<tr><td>12</td><td>P11</td><td>O</td><td>WIDE</td></tr>
<tr><td>13</td><td>P12</td><td>O</td><td></td><td>Unused.</td></tr>
</table>

• Explanation of terminals (IC6)

<table>
<tr><th>Pin No.</th><th>Pin name</th><th>I/O</th><th>Symbol</th><th>Description</th></tr>
<tr><td>1</td><td>P1</td><td>O</td><td>V4</td><td rowspan="5">FL static display control pin.
"H" : Goes out, "L" : Lights on.</td></tr>
<tr><td>2</td><td>P2</td><td>O</td><td>V3</td></tr>
<tr><td>3</td><td>P3</td><td>O</td><td>ON</td></tr>
<tr><td>4</td><td>P4</td><td>O</td><td>CENTER</td></tr>
<tr><td>5</td><td>P5</td><td>O</td><td>REAR</td></tr>
<tr><td>6</td><td>P6</td><td>O</td><td>HEADPHONE</td><td>Headphone relay control pin. ON : "H", OFF : "L"</td></tr>
<tr><td>7</td><td>P7</td><td>O</td><td>EQ OFF</td><td rowspan="2">EQ ON/OFF control pin.
<table>
<tr><th>Status \ Pin</th><th>EQ OFF</th><th>EQ ON</th></tr>
<tr><td>EQ OFF</td><td>1</td><td>0</td></tr>
<tr><td>EQ ON</td><td>0</td><td>1</td></tr>
<tr><td>CD DIRECT ON</td><td>0</td><td>0</td></tr>
</table></td></tr>
<tr><td>8</td><td>P8</td><td>O</td><td>EQ ON</td></tr>
<tr><td>9</td><td>P9</td><td>O</td><td>DOLBY PRO LOGIC</td><td rowspan="4">LED display pins. "H" : Lights on, "L" : Goes out</td></tr>
<tr><td>11</td><td>P10</td><td>O</td><td>THEATER</td></tr>
<tr><td>12</td><td>P11</td><td>O</td><td>HALL</td></tr>
<tr><td>13</td><td>P12</td><td>O</td><td>CD DIRECT</td></tr>
</table>

CIRCUIT DESCRIPTION

3-5. Switch IC : TC9164N, TC9163N (X09- : IC2 ~ 3), TC9162N (X08- : IC4)

• Assignment

SW pins / IC	S1	S2	S3	S4	S5	S6	S7	S8
TC9164N (ST1) (X09-) IC2	VIDEO	TUNER	TAPE1	PHONO	$\overline{\text{TAPE2}}$	TAPE2	CD	CD DIRECT
TC9163N (ST1) (X09-) IC3	4 → 1	3 → 1	2 → 1	VIDEO4	VIDEO3	VIDEO2	VIDEO1	$\overline{\text{V2 AI}}$
TC9163N (ST2) (X09-) IC4	HALL	PRO LOGIC	$\overline{\text{PRO LOGIC}}$	$\overline{\text{TAPE1}}$	V2 AI	V1 AI	EQ REC	$\overline{\text{EQ REC}}$

• TC9162N control

Status		L							R						
		S1	S2	S3	S4	S5	S6	S7	S1	S2	S3	S4	S5	S6	S7
TEST TONE ON	L ch (L)	O	–	–	O	–	–	–	–	O	O	–	O	–	–
	C ch (L+R)	O	–	–	O	–	–	–	–	O	–	O	–	O	O
	R ch (R)	O	–	–	O	–	–	–	–	O	O	–	–	–	O
	S ch (L–R)	O	–	–	O	–	–	O	–	O	–	O	O	–	O
KR-V9010 SURROUND	PRO ROGIC	–	O	–	O	–	–	O	O	–	–	–	–	–	–
	THEATER	–	–	O	–	–	O	–	–	–	–	–	–	–	–
	HALL	–	–	O	–	O	–	–	–	–	–	–	–	–	–
KR-V8010 SURROUND	DOLBY	–	–	–	O	–	O	–	–	–	–	–	–	–	–
	THEATER	–	–	O	–	–	O	–	–	–	–	–	–	–	–
	HALL	–	–	O	–	O	–	–	–	–	–	–	–	–	–
SURROUND BYPASS		–	–	–	–	–	–	–	–	–	–	–	–	–	–

O : SW ON, – : SW OPEN

3-6. PLL IC : LM7001 (X05- : IC2) port assignment

	BO1 (2)	BO3 (9)
FM	1	O
AM	0	1
Other than tuner	0	0

	BO2 (8)
AUTO	0
MONO	1

0 : Short 1 : Open

3-7. GE VR : LC7522 (X09- : IC12) control

S pin (13) = VEE
f1 = 60Hz … f7 = 15kHz

3-8. EQ/SPI display IC : LC7565 (X14- : IC4) control

S1 pin (15) = VSS
S2 pin (16) = VSS
f1 = 60Hz … f7 = 15kHz

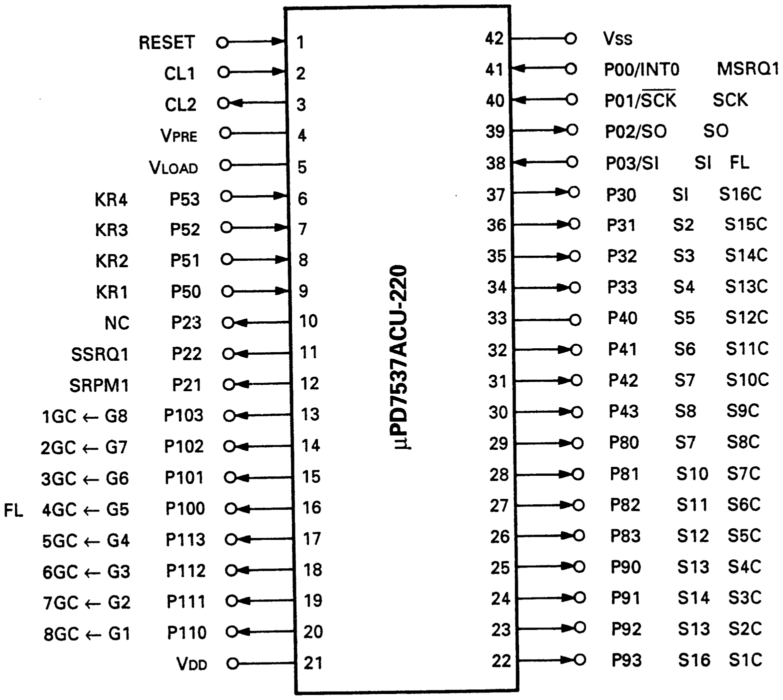
3-9. Electronic volume control : TC9176P (X09- : IC10) control

R side : Rear volume
L side : Center volume

CIRCUIT DESCRIPTION

4. Sub microprocessor (1) : μPD7537ACU-220 (X14- : IC2)

4-1. Terminal connection diagram


μPD7537ACU-220
RESET 1
CL1 2
CL2 3
VPRE 4
VLOAD 5
KR4 P53 6
KR3 P52 7
KR2 P51 8
KR1 P50 9
NC P23 10
SSRQ1 P22 11
SRPM1 P21 12
1GC ← G8 P103 13
2GC ← G7 P102 14
3GC ← G6 P101 15
FL 4GC ← G5 P100 16
5GC ← G4 P113 17
6GC ← G3 P112 18
7GC ← G2 P111 19
8GC ← G1 P110 20
VDD 21
42 Vss
41 P00/INT0 MSRQ1
40 P01/SCK SCK
39 P02/SO SO
38 P03/SI SI FL
37 P30 SI S16C
36 P31 S2 S15C
35 P32 S3 S14C
34 P33 S4 S13C
33 P40 S5 S12C
32 P41 S6 S11C
31 P42 S7 S10C
30 P43 S8 S9C
29 P80 S7 S8C
28 P81 S10 S7C
27 P82 S11 S6C
26 P83 S12 S5C
25 P90 S13 S4C
24 P91 S14 S3C
23 P92 S13 S2C
22 P93 S16 S1C

4-2. Key matrix (KEY1)

O I	G1 P110 (20)	G2 P111 (19)	G3 P112 (18)	G4 P113 (17)	G5 P100 (16)	G6 P101 (15)	G7 P102 (14)	G8 P103 (13)
KR1 P50 (9)	EQ B	EQ C	EQ D	EQ f UP	EQ A	EQ DOWN	–	EQ f DOWN
KR2 P51 (8)	–	–	VIDEO4 (VIDEO3)	DOLBY PRO LOGIC (DOLBY)	HALL	SURROUND BYPASS	THEATER	SP A
KR3 P52 (7)	EQ MEMORY	SPI/EQ	EQ REC ON/OFF	EQ ON/DEFEAT	EQ UP	SP B	CHARACTER	DIRECT
KR4 P53 (6)	6	1	–	TUNING DOWN	AUTO/MANU.	TUNING UP	DIGIT	TUNER MEMORY

( ) for KR-V8010

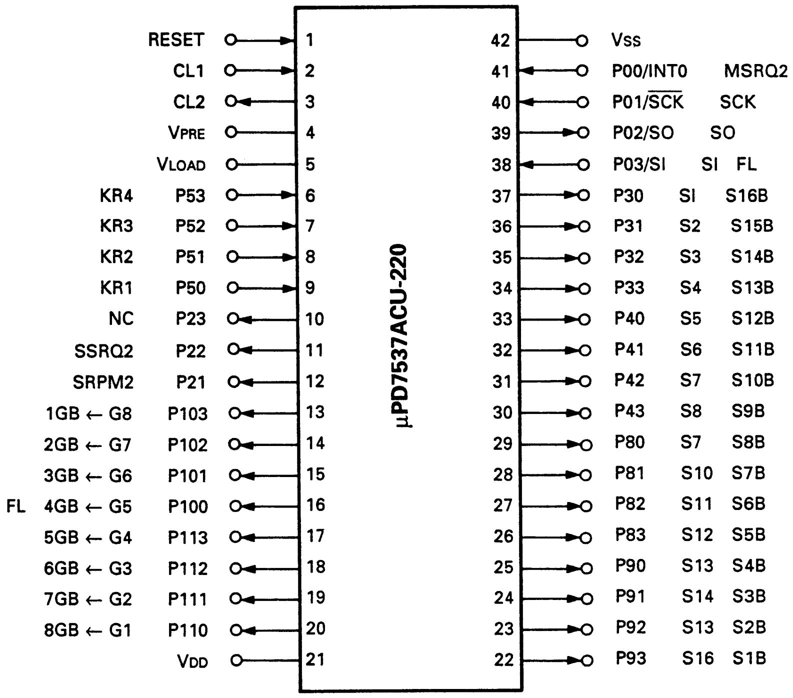
4-3. Explanation of terminals

Pin No.	Pin name	I/O	Symbol	Description
1	RESET	I		Display microprocessor reset pin. Reset is applied by the INISW1 of extension IC CXD1057P which is controlled by the main microprocessor.
2	CL1	I		Display microprocessor system clock oscillation pins (600kHz).
3	CL2	O		
4	VPRE			Display pin predriver power supply pin.
5	VLOAD			Display pin load power supply pin (–30V).
6~9	P53~P50	I	KR4~KR1	Key matrix return signal input pins.
10	P23	O	NC	Unused pin, which should be open.
11	P22	O	SSRQ1	Pin to output the communication request signal from the display microprocessor to the main microprocessor. Normally "L", and "H" with communication request (when a pertinent key of display microprocessor is pressed).
12	P21	O	SRPM1	Pin to input the communication acknowledge signal from the display microprocessor to the main microprocessor (per 8-bits).
13~16	P103~P100	O	G8~G5	FL grid control signal output pins (1GC~8GC of FL tube).
17~20	P113~P110	(P-ch open drain, mask option, built-in resistor)	G4~G1	
21	VDD			Power supply pin (+5V).
22~25	P93~P90	O	S16~S13	FL segment control signal output pins (S1C~S16C of FL tube).
26~29	P83~P80	(P-ch	S12~S9	
30~33	P43~P40	open drain,	S8~S5	
34~37	P33~P30	mask option, built-in resistor)	S4~S1	
38	P03/SI	I	SI	Pin to input the signal of communication with main microprocessor (display data input).
39	P02/SO	O	SO	Pin to output the signal of communication with main microprocessor (key data output).
40	P01/SCK	I	SCK	Pin to input the clock for communication with main microprocessor.
41	P00/INT0	I	MSRQ1	Pin to input the communication request signal from main microprocessor (per 8-bits).
42	Vss			GND pin.

CIRCUIT DESCRIPTION

5. Sub microprocessor (2) : μPD7537ACU-220 (X14- : IC3)

5-1. Terminal connection diagram


μPD7537ACU-220
RESET 1
CL1 2
CL2 3
VPRE 4
VLOAD 5
KR4 P53 6
KR3 P52 7
KR2 P51 8
KR1 P50 9
NC P23 10
SSRQ2 P22 11
SRPM2 P21 12
1GB ← G8 P103 13
2GB ← G7 P102 14
3GB ← G6 P101 15
FL 4GB ← G5 P100 16
5GB ← G4 P113 17
6GB ← G3 P112 18
7GB ← G2 P111 19
8GB ← G1 P110 20
VDD 21
42 Vss
41 P00/INT0 MSRQ2
40 P01/SCK SCK
39 P02/SO SO
38 P03/SI SI FL
37 P30 SI S16B
36 P31 S2 S15B
35 P32 S3 S14B
34 P33 S4 S13B
33 P40 S5 S12B
32 P41 S6 S11B
31 P42 S7 S10B
30 P43 S8 S9B
29 P80 S7 S8B
28 P81 S10 S7B
27 P82 S11 S6B
26 P83 S12 S5B
25 P90 S13 S4B
24 P91 S14 S3B
23 P92 S13 S2B
22 P93 S16 S1B

5-2. Key matrix (KEY2)

O / I	G1 P110 (20)	G2 P111 (19)	G3 P112 (18)	G4 P113 (17)	G5 P100 (16)	G6 P101 (15)	G7 P102 (14)	G8 P103 (13)
KR1 P50 (9)	CD (CD DIRECT)	2 → 1	PHONO (CD)	TUNER (PHONO)	TPE1 (TUNER)	0/10	1-10/11-20	5
KR2 P51 (8)	DELAY TIME DOWN	3 → 1	VIDEO1 (TAPE2)	THROUGH DUBBING OFF	TAPE2 (TAPE1)	9	P.SCAN	4
KR3 P52 (7)	CENTER DOWN	4 → 1	VIDEO3 (VIDEO2)	AUDIO INJECTION	VIDEO2 (VIDEO1)	8	AM	3
KR4 P53 (6)	CENTER MODE	CENTER UP	PGM/SET	DELAY TIME UP	EQ E	7	FM	2

(   ) for KR-V8010

CIRCUIT DESCRIPTION

5-3. Explanation of terminals

Pin No.	Pin name	I/O	Symbol	Description
1	RESET	I		Display microprocessor reset pin. Reset is applied by the INISW1 of extension IC CXD1057P which is controlled by the main microprocessor.
2	CL1	I		Display microprocessor system clock oscillation pins (600kHz).
3	CL2	O		
4	VPRE			Display pin predriver power supply pin.
5	VLOAD			Display pin load power supply pin (–30V).
6~9	P53~P50	I	KR4~KR1	Key matrix return signal input pins.
10	P23	O	NC	Unused pin, which should be open.
11	P22	O	SSRQ2	Pin to output the communication request signal from the display microprocessor to the main microprocessor. Normally "L", and "H" with communication request (when a pertinent key of display microprocessor is pressed).
12	P21	O	SRPM2	Pin to input the communication acknowledge signal from the display microprocessor to the main microprocessor (per 8-bits).
13~16	P103~P100	O (P-ch open drain, mask option, built-in resistor)	G8~G5	FL grid control signal output pins (1GB~8GB of FL tube).
17~20	P113~P110		G4~G1	
21	VDD			Power supply pin (+5V).
22~25	P93~P90	O (P-ch open drain, mask option, built-in resistor)	S16~S13	FL segment control signal output pins (S1B~S16B of FL tube).
26~29	P83~P80		S12~S9	
30~33	P43~P40		S8~S5	
34~37	P33~P30		S4~S1	
38	P03/SI	I	SI	Pin to input the signal of communication with main microprocessor (display data input).
39	P02/SO	O	SO	Pin to output the signal of communication with main microprocessor (key data output).
40	P01/SCK	I	SCK	Pin to input the clock for communication with main microprocessor.
41	P00/INT0	I	MSRQ2	Pin to input the communication request signal from main microprocessor (per 8-bits).
42	Vss			GND pin.

6. Test mode

6-1. Setting by key on this unit itself

- **Initial setting function**
  1) Setting method
     While pressing the SYSTEM MEMORY key, plug in the power.
  2) Contents
     Every function is set to the initial status.
- **Test mode setting**
  1) Setting method
     While pressing the M1 key, plug in the power.
  2) Canceling method
     Plug out the power, then plug in the power again. In this case, however, the tuner's test frequency EQ memory is held.
  3) Contents
     · Tuner frequencies are set as follows

Destination Channel	K	E
1	FM 87.5MHz	FM 87.5MHz
2	FM 89.1MHz	FM 89.1MHz
3	FM 90.0MHz	FM 90.0MHz
4	FM 92.0MHz	FM 92.0MHz
5	FM 94.0MHz	FM 94.0MHz
6	FM 98.0MHz	FM 98.0MHz
7	FM 100.1MHz	FM 100.1MHz
8	FM 102.0MHz	FM 102.0MHz
9	FM 106.0MHz	FM 106.0MHz
10	FM 108.0MHz	FM 108.0MHz
11	AM 530.0kHz	AM 531.0kHz
12	AM 630.0kHz	AM 630.0kHz
13	AM 990.0kHz	AM 990.0kHz
14	AM 1440.0kHz	AM 1440.0kHz
15	AM 1610.0kHz	AM 1602.0kHz
16	AM (1700.0kHz)	

1700kHz is set only with the WIDE mode.

· EQ PGM memory setting
B : All max.
C : All min.

· FL and LEDs all light
However, the spectrum analyzer display, through dubbing display and rear/center display sections do not light.
This all lighting is canceled by operating an other key on this unit itself than the POWER key.

· Rear and center speaker volume up/down operation
3 points of +20dB, 0dB and –50dB

· Delay time up/down operation
With DOLBY SURROUND, 3 points of 30.0ms, 22.5ms and 15.0ms.
With THEATER SURROUND, 3 points of 30.0ms, 15.0ms and 0ms.

· EQ level up/down operation
3 points of +12dB, 0dB and –12dB.

CIRCUIT DESCRIPTION

7. Compressor/Expandor IC : μPC1571C (X08- : IC6)

7-1. Analog converter circuit

The S/N ratio is lowered due to the digital delay circuit. To offset this, a noise reduction is applied.

The signal is compressed down to half the dynamic range by the compressor circuit and is passed through a digital delay circuit. After that, it is expanded to twice by the expandor circuit to ensure the original dynamic range.

The μPC1571C is a high-performance integrated circuit capable of constituting a high-percision analog converter by a lesser number of externally connected components.

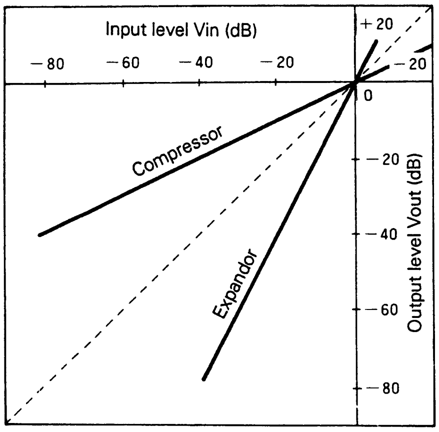
Incorporated within one paciage are a reference voltage circuit and a two-fold operation amplifier, gain cell and rectifier.

This IC can be applied to a limiter, a voltage controlled amplifier, an ordinary home-use device noise reduction circuit, etc., including a compandor as in a telephone system.

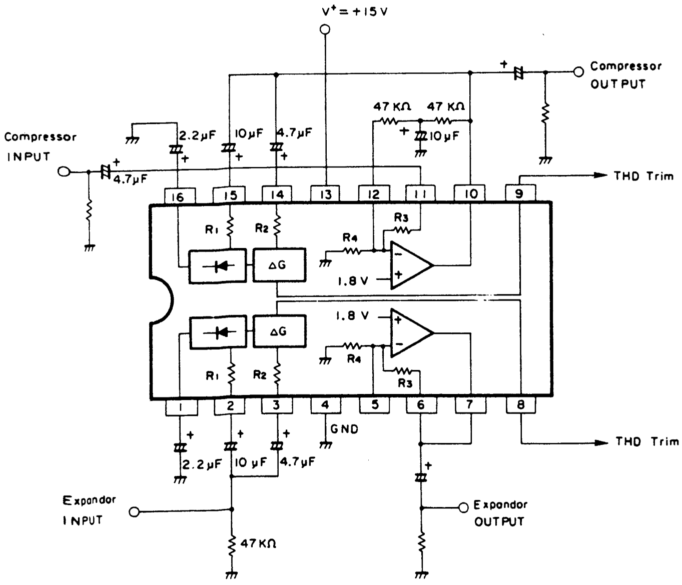
7-2. Features

- Operation on single power, +6V to +16V
- With built-in identical circuits of 2 channels, a compandor can be formed by one package.
- Dynamic range, approx. 70dB
- Distortion rate adjustable

7-3. Standard transfer characteristics



7-4. Standard application circuit example

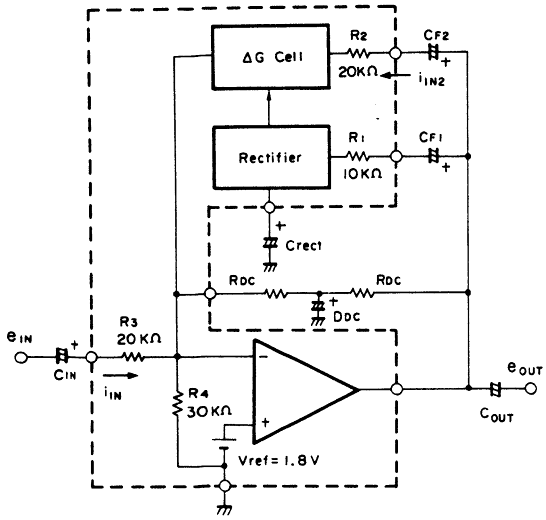

V+=+15V
Compressor OUTPUT
47KΩ
47KΩ
10μF
Compressor INPUT
2.2μF
10μF
4.7μF
4.7μF
THD Trim
16
15
14
13
12
11
10
9
R1
R2
R3
R4
ΔG
1.8V
1.8V
ΔG
R4
R1
R2
R3
1
2
3
4
5
6
7
8
GND
THD Trim
2.2μF
10μF
4.7μF
Expandor INPUT
Expandor OUTPUT
47KΩ

7-5. Description of terminals

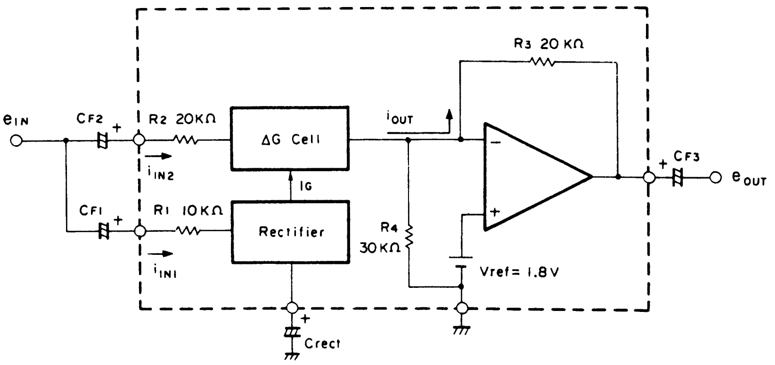
Pin No.	Function	Pin No.	Function
1	Crect1	9	THD Trim 2
2	Rect IN 1	10	OUT 2
3	ΔG Cell IN 1	11	R3 2
4	GND	12	Ii 2
5	Ii 1	13	Vcc
6	R3 1	14	ΔG Cell IN 2
7	OUT 1	15	Rect IN 2
8	THD Trim 1	16	Crect2

CIRCUIT DESCRIPTION

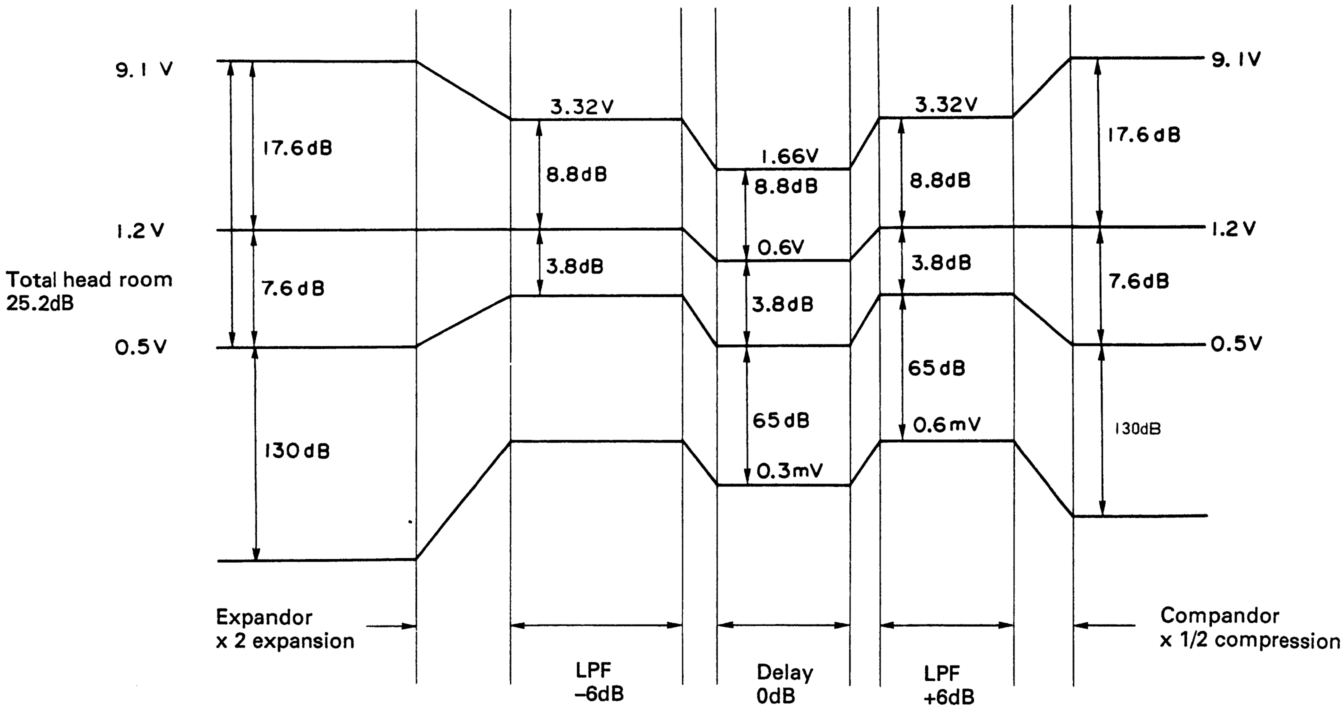
7-6. Compressor application circuit example


ΔG Cell
R2
20KΩ
CF2
i_{IN2}
Rectifier
R1
10KΩ
CF1
Crect
RDC
RDC
DDC
e_{IN}
CIN
R3
20KΩ
i_{IN}
R4
30KΩ
Vref= 1.8V
e_{OUT}
COUT

7-7. Operation as an expandor


e_{IN}
CF2
R2 20KΩ
ΔG Cell
R3 20 KΩ
i_{OUT}
i_{IN2}
IG
CF1
R1 10KΩ
Rectifier
R4
30KΩ
i_{IN1}
Vref= 1.8V
Crect
CF3
e_{OUT}

7-8. Theoretical values of head room and noise level with compressor/expandor circuit



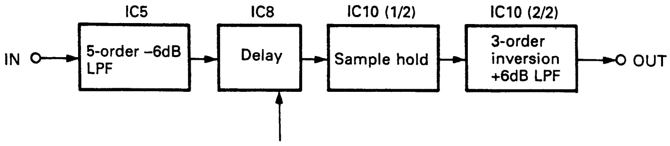
CIRCUIT DESCRIPTION

8. Digital delay : YM3428 (X08- : IC8)

8-1. Outline

IC8, a one-chip delay with one input system and two output systems, is controlled by all microprocessor serial data. Its inside is of a 14-bit configuration, and a PCM modulation is used.

In this unit, one input system and one output system are used, upon which PRO LOGIC, THEATER ot HALL the rear speaker output is emitted as a selay output from IC10 (2/2).


IC5
IC8
IC10 (1/2)
IC10 (2/2)
IN
5-order –6dB LPF
Delay
Sample hold
3-order inversion +6dB LPF
OUT

8-2. Function outline

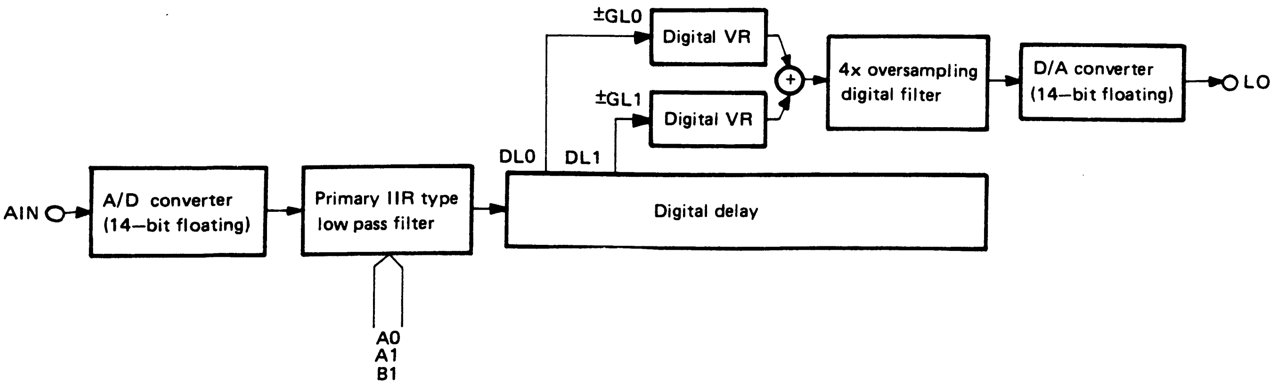
As shown in the internal process flow of figure, the analog signal input from pin AIN is converted into a digital form of floating 14-bit at a sampling rate os 24.9kHz by an A/D converter operating in a 14-bit floating manner and is entered to the promary IIR type low pass filter on the next stage. (Concerning this filter, its cutogg frequency can be controlled by the entry of coefficients to registers A0, A1 and B1 from a microprocessor connected.)

The digital delay unit, an RAM with four output taps, permits selection between tap positions by registers DL0, DL1, DR0 and DR1.

The respective outputs of these four taps are entered to their corresponding digital volume units, where are in turn subject to a digital attenuation process on coefficients of volume registers CL0, CL1 CR0 and CR1. Subsequently, in adder circuits, they undergo an addition process of L0 + L1 and R0 + R1 and are input to quadruple oversampling digital filters, in which loopback noises occurring in D/A conversion outputs are then attenuated with a reject band property of about –25dB, thus helping the externally connected low pass filters. The digital input to a D/A converter receives a quadruple sampling rate of 99.4kHz.

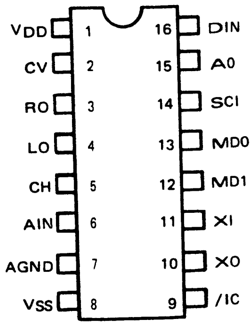
As regards the actuality of this digital processing system, a DSP process is made by an ROM type program within an LSI.

For preset modes, necessary parameters are put in a ROM in order to obtain carefully intended characteristics without intry of coefficients from a personal computer.

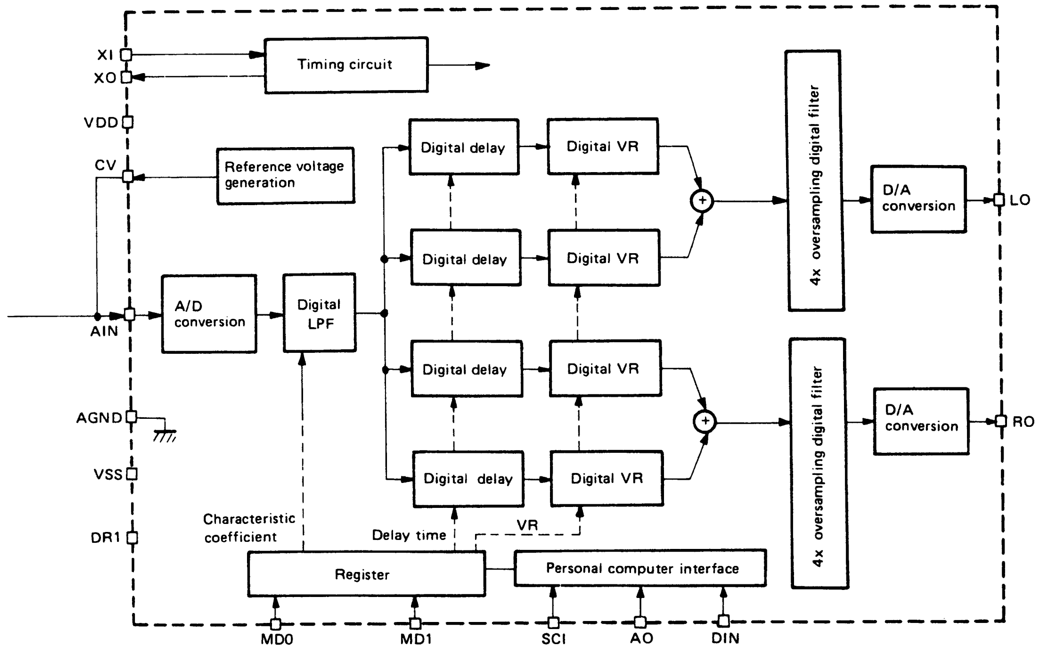

±GL0
Digital VR
±GL1
Digital VR
+
4x oversampling digital filter
D/A converter (14–bit floating)
LO
DL0
DL1
AIN
A/D converter (14–bit floating)
Primary IIR type low pass filter
Digital delay
A0
A1
B1

CIRCUIT DESCRIPTION

8-3. Terminal connection diagram


VDD 1
CV 2
RO 3
LO 4
CH 5
AIN 6
AGND 7
VSS 8
16 DIN
15 A0
14 SCI
13 MD0
12 MD1
11 XI
10 XO
9 /IC

8-4. Block diagram


XI
XO
VDD
CV
AIN
AGND
VSS
DR1
Timing circuit
Reference voltage generation
A/D conversion
Digital LPF
Digital delay
Digital VR
Digital delay
Digital VR
Digital delay
Digital VR
Digital delay
Digital VR
4x oversampling digital filter
4x oversampling digital filter
D/A conversion
D/A conversion
LO
RO
Characteristic coefficient
Delay time
VR
Register
Personal computer interface
MD0
MD1
SCI
AO
DIN

8-5. Explanation of terminals

Pin No.	Pin name	I/O	Description
1	VDD	–	+5V current.
2	CV	O	A/D conversion reference voltage (+2.5V) output pin.
3	RO	O	R-ch output pin (D/A conversion analog output).
4	LO	O	L-ch output pin (D/A conversion analog output).
5	CH	O	Sample-hold capacitor external connection pin.
6	AIN	I	Analog signal input pin (input with the reference of the CV voltage).
7	AGND	–	Grounding pin of A/D and D/A converter sections (Needs to be connected with Vss outside).
8	Vss	–	System grounding pin of digital system and the LSI.
9	/IC	*I	Reset pin.
10	XO	O	X'tal oscillator connection pins. (XI is the clock input pin when personal computer is used.)
11	XI	I	
12	MD1	*I	Mode setting pins.
13	MD0	*I	
14	SCI	I	Data shift clock input pin when personal computer is used.
15	AO	I	Address/data identification signal input pin when personal computer is used.
16	DIN	I	Data input pin when personal computer is used.

Any pin marked with * has a pull-up resistor connected.

CIRCUIT DESCRIPTION

9. Dolby B type noise reduction
: LA2730 (X08- : IC9)

9-1. Outline

This noise reduction circuit is completely different from Dolby B for cassette decks in respect to frequency characteristic.

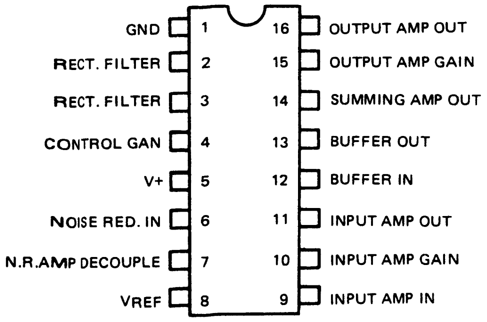
With 500mV = 0dB at Dolby level point 6, a gain control is made by IC6 in IN so as to obtain the same level as in OUT so that IN is of 500mV = 0dB.

Table shows input vs. output characteristics.

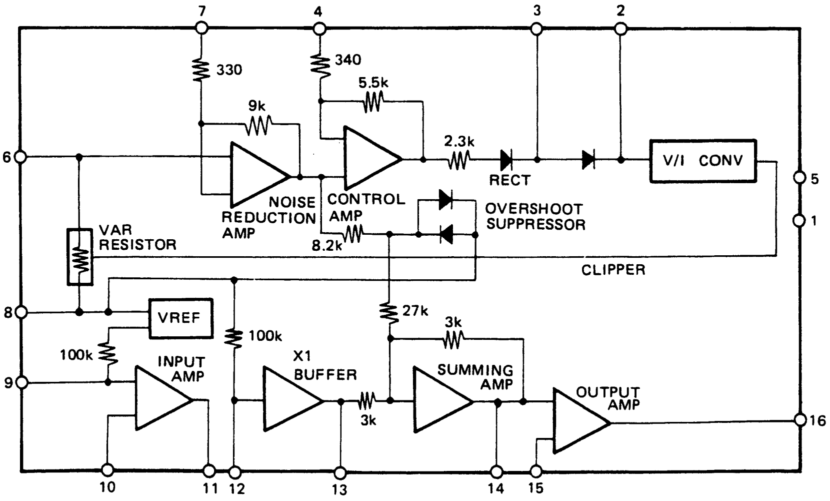
9-2. Modified B type processor decode characteristics

Hz dB	100	200	500	700	1.0K	1.4k	2.0k	3.0k	5.0k	7.0k	10.0k
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
–5	0.0	0.0	–0.1	–0.1	–0.1	–0.1	–0.1	–0.1	–0.1	–0.1	–0.1
–10	0.0	0.0	–0.3	–0.4	–0.4	–0.4	–0.3	–0.3	–0.3	–0.3	–0.3
–15	0.0	0.0	–0.8	–1.1	–1.4	–1.3	–1.2	–0.9	–0.7	–0.7	–0.7
–20	0.0	0.0	–0.8	–1.6	–2.4	–3.0	–3.0	–2.4	–1.7	–1.5	–1.4
–25	0.0	0.0	–0.9	–1.7	–2.8	–3.8	–4.6	–4.9	–4.1	–3.4	–2.9
–30	0.0	0.0	–1.0	–1.7	–2.9	–4.0	–5.0	–5.4	–5.4	–5.6	–5.2
–35	0.0	0.0	–1.0	–1.7	–2.9	–4.0	–5.0	–5.5	–5.6	–5.8	–5.7
–40	0.0	0.0	–1.0	–1.7	–2.9	–4.0	–5.0	–5.5	–5.7	–5.8	–5.8

9-3. Terminal connection diagram


GND 1
RECT. FILTER 2
RECT. FILTER 3
CONTROL GAN 4
V+ 5
NOISE RED. IN 6
N.R.AMP DECOUPLE 7
VREF 8
9 INPUT AMP IN
10 INPUT AMP GAIN
11 INPUT AMP OUT
12 BUFFER IN
13 BUFFER OUT
14 SUMMING AMP OUT
15 OUTPUT AMP GAIN
16 OUTPUT AMP OUT

9-4. Block diagram


7
4
3
2
330
340
5.5k
9k
2.3k
RECT
V/I CONV
6
5
1
NOISE REDUCTION AMP
CONTROL AMP
OVERSHOOT SUPPRESSOR
VAR RESISTOR
8.2k
CLIPPER
8
VREF
27k
3k
100k
100k
INPUT AMP
X1 BUFFER
SUMMING AMP
OUTPUT AMP
9
3k
16
10
11
12
13
14
15

CIRCUIT DESCRIPTION

10. Display controller CMOS LSI
: MB88323A-K2 (X13- : IC5)

10-1. Outline

The MB88323A-K2 is a display controller CMOS LSI to display characters and graphic patterns on the TV display under the control from the microprocessor. The display size is 20 characters x 9 lines.

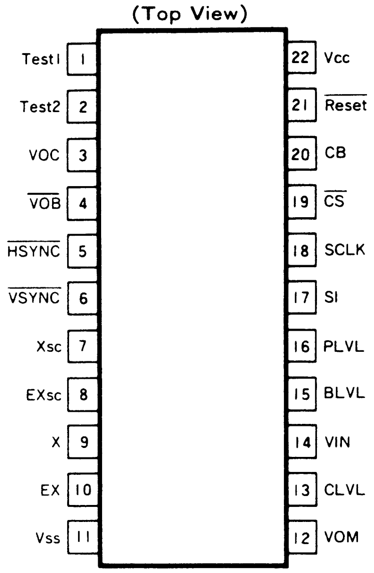
This LSI with a built-in character generator ROM creating 64 kinds of characters is capable of displaying alphanumeric characters and special characters.

Moreover, this LSI has a built-in character generator RAM creating programmable 62 kinds of characters, too. With character patterns set in this RAM, it is also capable of a wide variety of usages such as semi-graphic displays, etc. by combining character patterns in sequence, including alphanumeric characters and special characters.

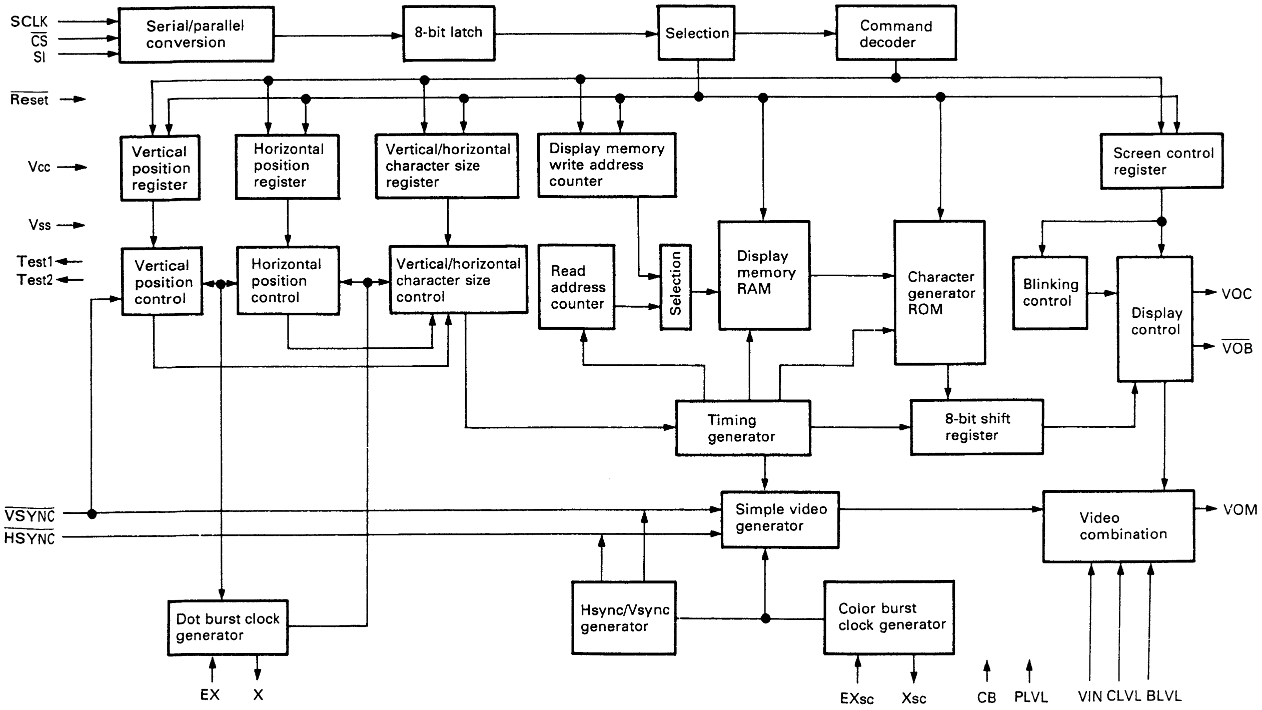
This LSI is also provided with a dot interpolation feature for fineness of oblique lines and can expand the character size for example to 16 x 16 dots in units of 8 dots.

This display output can be combined with the TV picture signal or the VTR output signal, and that combined image can be recorded to a VTR.

10-2. Terminal connection diagram


(Top View)
Test1 1
Test2 2
VOC 3
VOB 4
HSYNC 5
VSYNC 6
Xsc 7
EXsc 8
X 9
EX 10
Vss 11
22 Vcc
21 Reset
20 CB
19 CS
18 SCLK
17 SI
16 PLVL
15 BLVL
14 VIN
13 CLVL
12 VOM

10-3. Block diagram


SCLK
CS
SI
Reset
Vcc
Vss
Test1
Test2
VSYNC
HSYNC
Serial/parallel conversion
8-bit latch
Selection
Command decoder
Vertical position register
Horizontal position register
Vertical/horizontal character size register
Display memory write address counter
Screen control register
Vertical position control
Horizontal position control
Vertical/horizontal character size control
Read address counter
Selection
Display memory RAM
Character generator ROM
Blinking control
Display control
VOC
VOB
Timing generator
8-bit shift register
Simple video generator
Video combination
VOM
Dot burst clock generator
Hsync/Vsync generator
Color burst clock generator
EX
X
EXsc
Xsc
CB
PLVL
VIN
CLVL
BLVL

CIRCUIT DESCRIPTION

10-4. Explanation of terminals

Symbol	Pin No.	I/O	Function
EXtal	10	I	Pins to externally connect the dot clock pulse generator.
Xtal	9	O	
$\overline{\text{Reset}}$	21	I	TVDC reset input. With $\overline{\text{Reset}}$ "L", TVDC is initialized. For power ON, the vertical sync signal must be input to the $\overline{\text{VSYNC}}$ pin. Hysteresis input.
$\overline{\text{HSYNC}}$	5	I	Horizontal sync signal input. Hysteresis input.
$\overline{\text{VSYNC}}$	6	I	Vertical sync signal input. Hysteresis input.
$\overline{\text{CS}}$	19	I	Chip select input, which becomes "L" for serial transfer. Hysteresis input.
SCLK	18	I	Shift clock pulse input for serial transfer. Hysteresis input. (At its rise, SI read in.)
SI	17	I	Data input for display control. Hysteresis input. (8-bit serial data)
VIN	14	I	Video signal input. (Analog input)
CLVL	13	I	Character level input. (Analog input)
VOM	12	O	Combined signal output of video signal, character signal and outline or background signal. (Analog output)
VOC	3	O	Character signal output.
$\overline{\text{VOB}}$	4	O	Outline or background signal output.
EXsc	8	I	Pins to externally connect color burst (7.15909MHz or 14.31818MHz) clock pulse generator.
Xsc	7	O	Also used to generate the internal sync signal for video mode 2.
CB	20	I	Selection between existence and nonexistence of color burst signal when video mode 2 is engaged.
PLVL	16	I	Pedestal level input, which when video mode 2 is engaged serves to match the pedestal level of the internal simple video signal and that of the external video signal.
Vcc	22	I	+5V power supply external connection pin.
Vss	11	I	Ground pin.
Test 1	1	O	Chip test pin.
Test 2	2	O	Normally open.

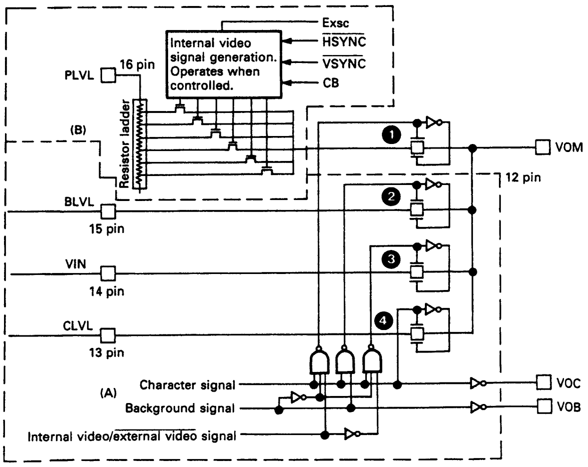
10-5. For superimposing characters in external video signal

The video signal input from pin 14 is output to pin 12 (VOM) through snalog switch ❸, in which way analog switch ❸ turns OFF and switch ❷ turns ON at a position at which characters are superimposed.

At this time, the voltage at pin 15 is output to VOM. When this voltage level is lower, the black signal appears.

Subsequently, switch ❷ turns OFF and ❹ turns ON. Thus, the level of pin 13 is higher than pin 15, in which case a signal near to white appears.

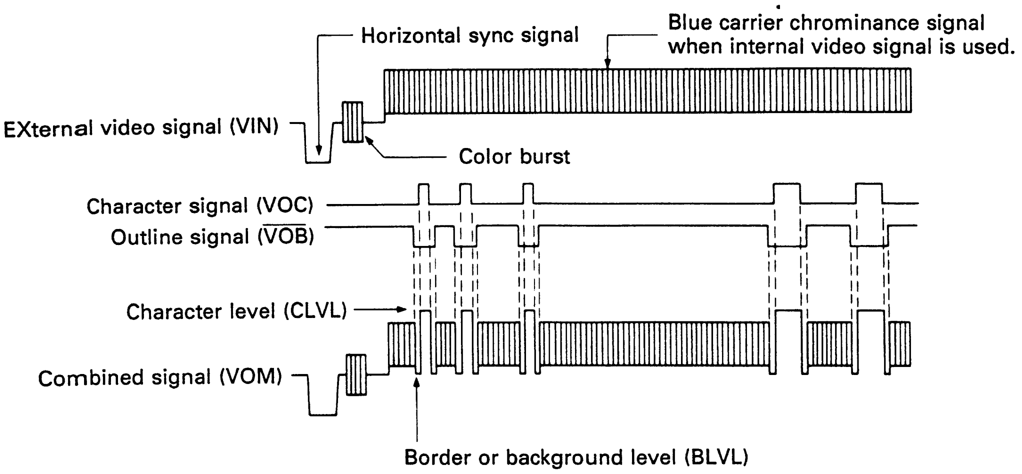
Like this, by the ON/OFF operation of analog switches ❷ , ❸ and ❹ , signals of two different levels (character signal and character outline signal) are superimposed on the video signal.


Exsc
$\overline{\text{HSYNC}}$
$\overline{\text{VSYNC}}$
CB
Internal video signal generation. Operates when controlled.
PLVL
16 pin
Resistor ladder
(B)
❶
VOM
12 pin
❷
BLVL
15 pin
❸
VIN
14 pin
❹
CLVL
13 pin
(A)
Character signal
Background signal
Internal video/$\overline{\text{external video}}$ signal
VOC
VOB

CIRCUIT DESCRIPTION

10-6. For generating internal video signal

When no video signal is input, an IC generates video signal to output it. At this time, analog switch ❶ turns ON and the rest turn OFF. The internal video signal is generated from the dividing process of frequency 7.15909MHz (twice the frequency of the color subcarrier).

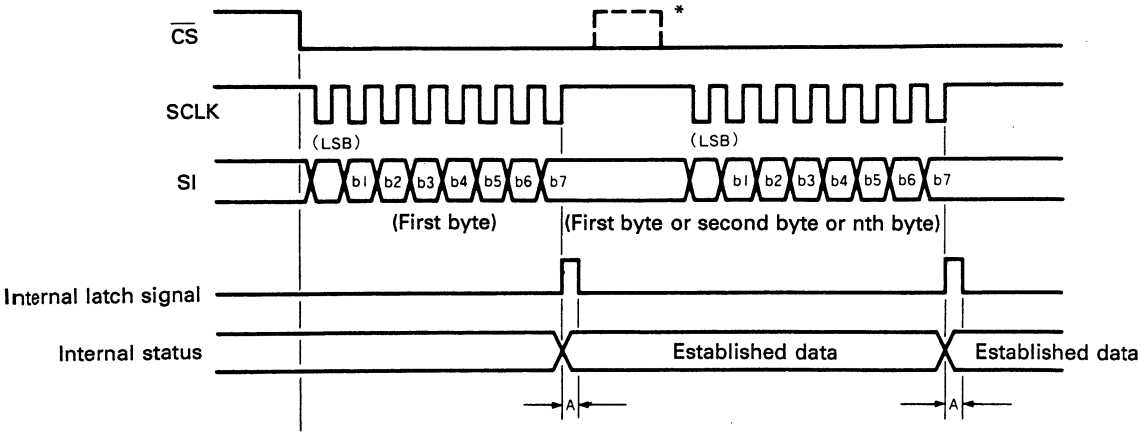

Horizontal sync signal
Blue carrier chrominance signal when internal video signal is used.
EXternal video signal (VIN)
Color burst
Character signal (VOC)
Outline signal ($\overline{VOB}$)
Character level (CLVL)
Combined signal (VOM)
Border or background level (BLVL)

10-7. Fata transfer method and command write method

The display control command and data writing is performed in a manner of 8-bit serial transfer.

For serial transfer, the $\overline{CS}$ pin is made "L". While the $\overline{CS}$ pin is "L", any data whatever in the first byte, the second byte ... the nth byte of each command can be transferred.

The data, of 8-bit length, is shifted and input to the SI pin in order from the LSB. As shown in figure, at the rise of the shift clock pulse input to the SCLK pin, data is taken in and shifted. At the rise of a shift clock pulse corresponding to the eighth bit, the transferred data is latched in.


$\overline{CS}$
*
SCLK
(LSB)
(LSB)
SI
b1
b2
b3
b4
b5
b6
b7
(First byte)
(First byte or second byte or nth byte)
Internal latch signal
Internal status
Established data
Established data
A
A

* There is another available method.
For byte synchronization, the $\overline{CS}$ pin is returned to "H" once during serial data transfer, after which the $\overline{CS}$ pin is set to "L" again.

Serial transfer timing

CIRCUIT DESCRIPTION

11. PRO LOGIC IC : LA2770 (X08- : IC12)

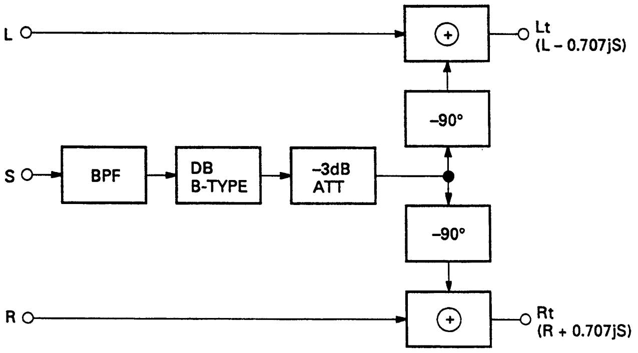
11-1. General

The LA2770 is a decoder IC for Dolby pro-logic surround effect systems, featuring adaptive matrix and center mode control functions. Dolby surround effect encoded signals are input to the IC through two channels and are decoded into I.C.R. and S. four-channel signals. A complete Dolby pro-logic surround decoder can be built by combining the IC with an input balancer, noise sequencer, delay circuit 7kHz low-pass filter, modified Dolby noise reduction circuit, and a master output level control.

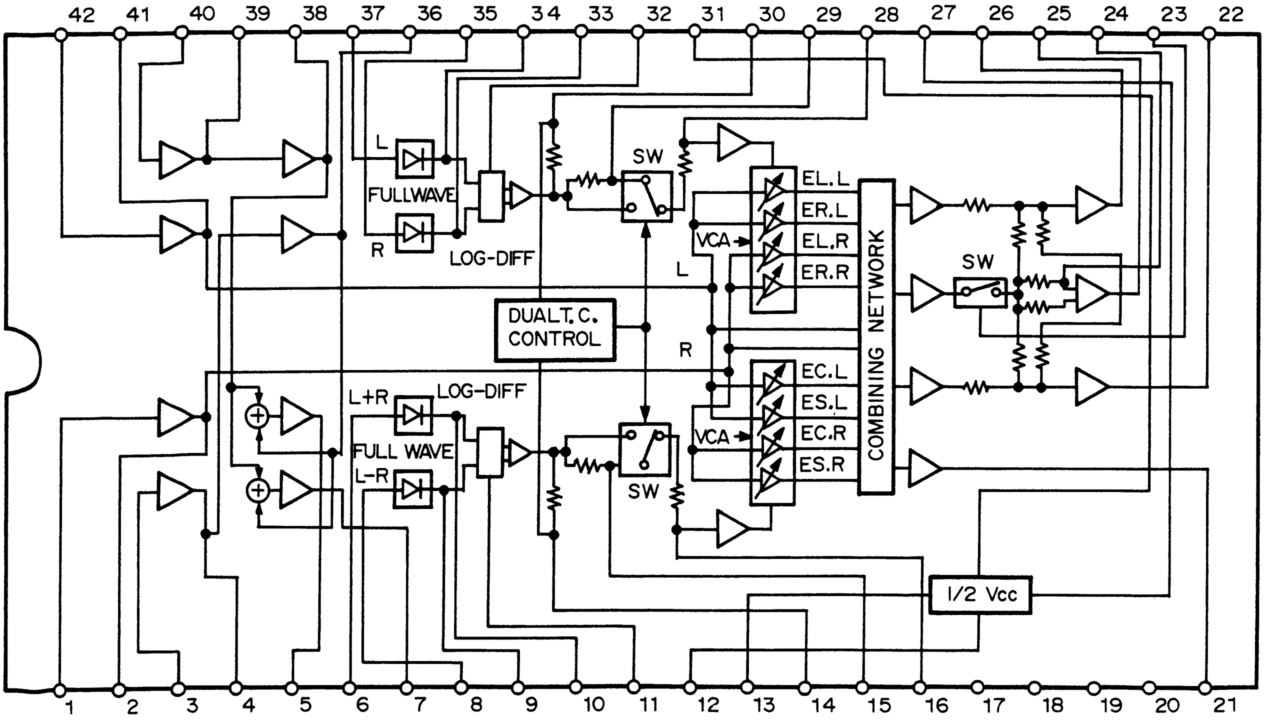
11-2. Functions

- Full-function adaptive matrix (input buffer, BPF, full-wave rectifier, logarithmic differential amplifier, thershold switch, dual time constant, polarity splitter, VCA, and combining network)
- Center mode selection (normal/phantom/wide)
- Center on/off selection
- SUR off mode

11-3. Explanation of Dolby pro-logic operation


L
S
R
BPF
DB B-TYPE
-3dB ATT
-90°
-90°
+
+
Lt (L - 0.707jS)
Rt (R + 0.707jS)

11-4. Block diagram


42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22
L
FULLWAVE
R
LOG-DIFF
SW
EL.L
ER.L
VCA
EL.R
ER.R
L
DUAL T.C. CONTROL
R
COMBINING NETWORK
EC.L
ES.L
EC.R
ES.R
L+R
LOG-DIFF
FULL WAVE
L-R
SW
1/2 Vcc
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION			SELECTOR: FM				
1	DETECTOR	(A) 98.0MHz 1kHz,±75kHz dev 60dBμ(ANT input)	Connect a DC voltmeter between TP3 and TP4.	AUTO or MONO 98.0MHz	L4 (X05-)	0V	(a)
2	DISTORTION (MONO)	(C) 98.0MHz 1kHz,±68.25kHz dev Selector:L or R Pilot:±6.75kHz dev 60dBμ(ANT input)	(B)	98.0MHz	L5 (X05-)	Minimum distortion.	
3	VCO	(A) 98.0MHz 0 dev 100dBμ(ANT input)	Connect a frequency counter between TP5 and GND.	AUTO 98.0MHz	VR3 (X05-)	19.00kHz	(b)
4	DISTORTION (STEREO)	(C) 98.0MHz 1kHz,±68.25kHz dev Selector:L or R Pilot:±6.75kHz dev 60dBμ(ANT input)	(B)	98.0MHz	IFT (Front end)	Minimum distortion.	
5	SEPARATION (E Type)	(C) 98.0MHz Stereo signal 60dBμ(ANT input)	(B)	AUTO 98.0MHz	VR4 (X05-)	Minimum crosstalk.	
6	TUNING LEVEL	(A) 98.0MHz 0 dev 14dBμ(ANT input) 75Ω	(B)	AUTO or MONO 98.0MHz	VR1 (X05-)	Adjust VR1 and stop at the point where FL1(TUNED) goes on.	
AM SECTION			Keep the AM loop antenna installed. SELECTOR: AM				
(1)	BAND EDGE (Low)	–	Connect a DC voltmeter between TP1(GND) and TP2.	–	L9 (X05-)	1.5V	(c)
(2)	BAND EDGE (High)	–	Connect a DC voltmeter between TP1(GND) and TP2.	–	TC2 (X05-)	8.0V	(c)
			Repeat alignments (1) and (2) several times.				
(3)	RF ALIGNMENT (1)	(D) 600kHz 20dBμ(ANT input)	(B)	–	L8 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
(4)	RF ALIGNMENT (2)	(D) 1400kHz 20dBμ(ANT input)	(B)	–	TC1 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
			Repeat alignments (3) and (4) several times.				
(5)	IF TRANSFORMER	(D) 1000kHz 20dBμ(ANT input)	(B)	–	L10 (X05-)	Maximum amplitud and symmetry of the oscilloscope display.	
(6)	TUNING LEVEL	(D) 1000kHz 36dBμ(ANT input)	(B)	–	VR2 (X05-)	Adjust VR2 and stop at the point where FL1(TUNED) goes on.	
AUDIO SECTION							
[1]	IDLE CURRENT	–	(E) Connect a DC voltmeter across CP1(L) CP2(R)	Volume: 0	VR1(L) VR2(R) (X89-)	10mV	(d)
[2]	SURROUND PRO LOGIC ADJUSTMENT	–	Connect a AC voltmeter between TP10 and GND.	TEST TONE ON	VR1 (X08-)	Noise level 60mV	(e)

REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF			SELECTEUR : FM				
1	DETECTEUR	(A) 98.0MHz 1kHz.±75kHz dév 60dBμ(Entrée ANT)	Relier un voltmètre CC entre les TP3 et TP4.	AUTO ou MONO 98.0MHz	L4 (X05-)	0V	(a)
2	DISTORSION (MONO)	(C) 98.0MHz 1kHz.68.25kHz dév Selection:l ou R Signal pilote: ±6.75kHz dév 60dBμ(Entrée ANT)	(B)	98.0MHz	L5 (X05-)	Distorsion minimale.	
3	OSCILLATEUR CONTROLE PAR LA TENSION	(A) 98.0MHz 0 dév 100dBμ(Entrée ANT)	Relier un compteur de fréquence entre les TP5 et GND.	AUTO 98.0MHz	VR3 (X05-)	19.00kHz	(b)
4	DISTORSION (STEREO)	(C) 98.0MHz 1kHz.68.25kHz dév Selection:l ou R Signal pilote: ±6.75kHz dév 60dBμ(Entrée ANT)	(B)	98.0MHz	Tête H.F. IFT (X05-)	Distorsion minimale.	
5	SEPARATION (E type)	(C) 98.0MHz Signal stéréo 60dBμ(Entrée ANT)	(B)	AUTO 98.0MHz	VR4 (X05-)	Diaphonie minimale.	
6	NIVEAU D'ACCORDER	(A) 98.0MHz 0 dév − 14dBμ(Entrée ANT) 75Ω	(B)	AUTO ou MONO 98.0MHz	VR1 (X05-)	Ajuster VR1 et arrêter le mouvement de VR1 au moment où le FL1(TUNED)s'allume.	
SECTION MA			Laisser l'antenne bouche MA installée. SELECTEUR: AM				
(1)	BORD DE BANDE (Bas)	-	Relier un voltmètre entre les TP1(GND) et TP2.	-	L9 (X05-)	1.5V	(c)
(2)	BORD DE BANDE (Haut)	-	Relier un voltmètre entre les TP1(GND) et TP2.	-	TC2 (X05-)	8.0V	(c)
			Répéter les points (1) et (2) plusieurs fois.				
(3)	ALIGNEMENT H.T. (1)	(D) 600kHz 20dBμ(Entrée ANT)	(B)	-	L8 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(4)	ALIGNEMENT H.T. (2)	(D) 1400kHz 20dBμ(Entrée ANT)	(B)	-	TC1 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
			Répéter les points (3) et (4) plusieurs fois.				
(5)	TRANSFORMATEUR F.I.	(D) 1000kHz 20dBμ(Entrée ANT)	(B)	-	L10 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(6)	NIVEAU D'ACCORDER	(A) 1000kHz 36dBμ(Entrée ANT)	-	-	VR2 (X05-)	Ajuster VR2 et arrêter le mouvement de VR2 au moment où le FL1(TUNED)s'allume.	
SECTION AUDIO							
[1]	COURANA DE POLARISATION	-	(E) Connecter un voltmètre CC sur CP1(L) CP2(R)	Volume: 0	VR1(G) VR2(D) (X89-)	10mV	(d)
[2]	SURROUND PRO LOGIC	-	Relier un voltmètre CA entre les TP10 et GND.	Fréquence de mesure ON	VR1 (X08-)	Niveau de bruit 60mV	(e)

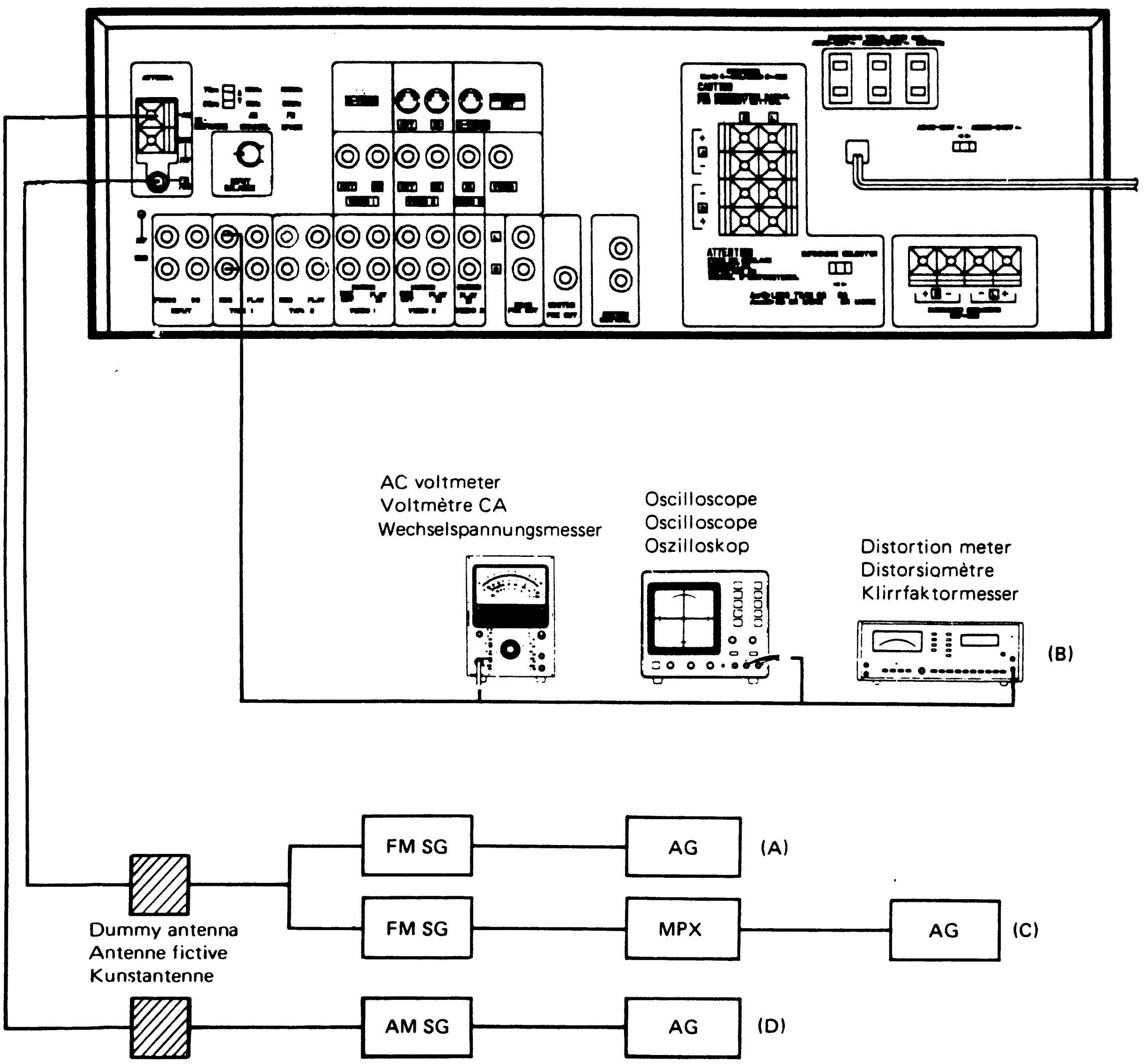
ABGLEICH

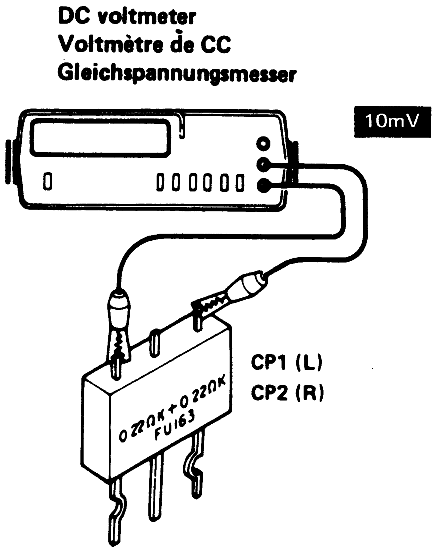
NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG			WÄHLER: FM				
1	DETEKTOR	(A) 98,0MHz 1kHz, ±75kHz Hub 60dBμ(ANT-Eingang)	Einen Gleichspannungsmesser zwischen TP3 und TP4 anschließen.	AUTO oder MONO 98,0MHz	L4 (X05-)	0V	(a)
2	KLIRRFAKTOR (MONO)	(C) 98,0MHz 1kHz, ±68,25kHz Hub Wähler: L oder R Pilotten: ±6,75kHz Hub 60dBμ(ANT-Eingang)	(B)	98,0MHz	L5 (X05-)	Minimal Klirrfaktor.	
3	SPANNUNGS-GEREGELTER OSZILLATOR	(A) 98,0MHz 0 Hub 100dBμ(ANT-Eingang)	Einen Frequenzzähler zwischen TP5 und GND anschließen.	AUTO 98,0MHz	VR3 (X05-)	19,00kHz	(b)
4	KLIRRFAKTOR (STEREO)	(C) 98,0MHz 1kHz, ±68,25kHz Hub Wähler: L oder R Pilotten: ±6,75kHz Hub 60dBμ(ANT-Eingang)	(B)	98,0MHz	Frontend IFT (X05-)	Minimal Klirrfaktor.	
5	STEREO KANAL TRENNUNG (E Type)	(C) 98,0MHz Stereo Signal 60dBμ(ANT-Eingang)	(B)	AUTO 98,0MHz	VR4 (X05-)	Minimal Klirrfaktor.	
6	ABSTIMM PEGEL	(A) 98,0MHz 0 Hub – 14dBμ(ANT-Eingang) 75Ω	(B)	AUTO oder MONO 98,0MHz	VR1 (X05-)	Den Pegel wiederstand aufdrehen, und dem VR1 Halt geben wobei den FL1(TUNED) anzeiger leuchtet wird.	
MW-EMPFANGSABTEILUNG			Die MW-Rahmenantenne angebracht lassen. WÄHLER: AM				
(1)	BANDKANTE (Niedrig)	–	Einen Gleichspannungsmesser zwischen TP1(GND) und TP2 anschließen.	–	L9 (X05-)	1,5V	(c)
(2)	BANDKANTE (Hoch)	–	Einen Gleichspannungsmesser zwischen TP1(GND) und TP2 anschließen.	–	TC2 (X05-)	8,0V	(c)
			Abstimmungen (1) und (2) mehrere Male wiederholen.				
(3)	HF-ABGLEICH (1)	(D) 600kHz 20dBμ(ANT-Eingang)	(B)	–	L8 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(4)	HF-ABGLEICH (2)	(D) 1400kHz 20dBμ(ANT-Eingang)	(B)	–	TC1 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
			Abstimmungen (3) und (4) mehrere Male wiederholen.				
(5)	ZF-UBERTRAGER	(D) 1000kHz 20dBμ(ANT-Eingang)	(B)	–	L10 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(6)	ABSTIMM PEGEL	(A) 1000kHz 36dBμ(ANT-Eingang)	–	–	VR2 (X05-)	Den Pegel wiederstand aufdrehen, und dem VR2 Halt geben wobei den FL1(TUNED) anzeiger leuchtet wird.	
AUDIO-ABTEILUNG							
[1]	LEERLAUFSTROM	–	(E) Einen Gleichspannungsmesser über CP1(L) CP2(R) anschließen.	Volume: 0	VR1(L) VR2(R) (X89-)	10mV	(d)
[2]	SURROUND PRO LOGIC	–	Einen Wechselspannungsmesser zwischen TP10 und GND anschließen.	Meßton ON	VR1 (X08-)	Geräuschpegel 60mV	(e)

KR-V9010

ADJUSTMENT/REGLAGE/ABGLEICH

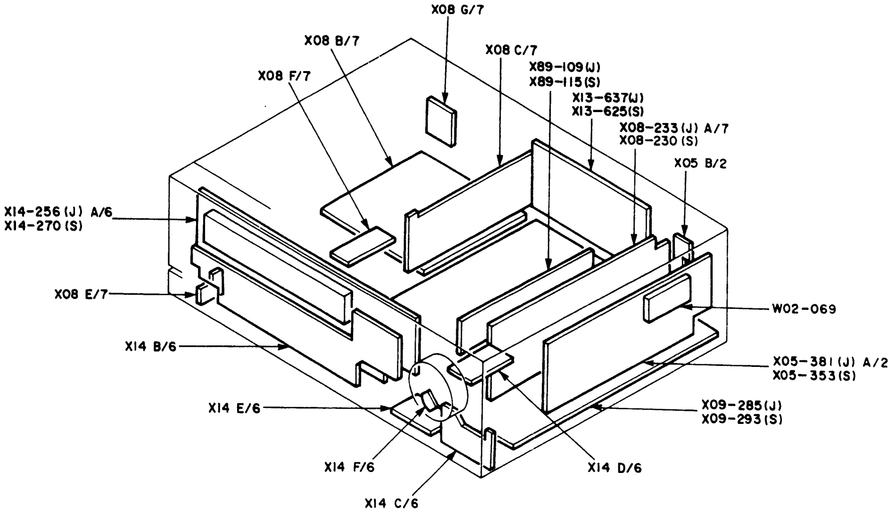
System connections/Raccordements du système/System-Anschlusse


AC voltmeter
Voltmètre CA
Wechselspannungsmesser
Oscilloscope
Oscilloscope
Oszilloskop
Distortion meter
Distorsiomètre
Klirrfaktormesser
(B)
FM SG
AG
(A)
FM SG
MPX
AG
(C)
Dummy antenna
Antenne fictive
Kunstantenne
AM SG
AG
(D)


DC voltmeter
Voltmètre de CC
Gleichspannungsmesser
10mV
CP1 (L)
CP2 (R)
0.22ΩK+0.22ΩK
FU163

(E)

PERSPECTIVE OF PC BOARDS / VOLTAGE TABLE


X08 G/7
X08 B/7
X08 C/7
X08 F/7
X89-109(J)
X89-115(S)
X13-637(J)
X13-625(S)
X08-233(J) A/7
X08-230(S)
X05 B/2
X14-256(J) A/6
X14-270(S)
X08 E/7
W02-069
X14 B/6
X05-381(J) A/2
X05-353(S)
X14 E/6
X09-285(J)
X09-293(S)
X14 F/6
X14 D/6
X14 C/6

(X05-)

IC1

1~3	2.36V
4	0V
5	9.2V
6	9.15V
7	9.13V
8	4.27V
9	3.45V
10	3.26V
11	1.26V
12	1.48V
13,14	0.26V
15	2.39V
16	1.45V
17	6.79V
18,19	0.05V
20,21	3.95V
22	2.83V

IC2

1	0.75V
2	1.64V
6	0.07V
7	11.16V
8	0.01V
9	0.2V
10	0.06V
11	2.8V
12,13	5.16V
14	2.05V
15	1.16V
16	0V

IC3

1	10.6V
2	2.57V
3	5.85V
4,5	8.52V
6,7	2.79V
8	0V
9	5.1V
10,11	2.55V
12	2.54V
13,14	2.56V
15	3.19V
16	2.5V

	B	C	E
Q1	2.4V	8.8V	1.7V
Q2	0.6V	1.9V	–
Q3	1.2V	1.9V	0.6V
Q7	10.5V	11V	11V
Q8	11.2V	0.07V	11V

(X08-)

IC1, 3

1~3	0V
4	15V
5~10	0V
11	–15V
12~14	0V

IC2

1~6	2.9V
7	0V
8~13	2.9V
14	5.0V

IC4

1	–15V
2~5	0V
6	0.4V
7~27	0V
28	15V

IC5

1~3	0V
4	–15V
5~7	0V
8	15V

IC6

1	0.9V
2,3	1.8V
4	0V
5	1.8V
6,7	6.7V
8,9	1.8V
10	8.0V
11,12	1.8V
13	15V
14,15	1.8V
16	0.9V

IC7

1	15V
2	0V
3	5.0V

IC8

1	4.9V
2~6	2.4V
7,8	0V
9	4.9V
10	2.2V
11	2.3V
12~15	0V
16	4.9V

IC9

1	0V
2	6.1V
3	6.2V
4	6.6V
5	14V
6	6.3V
7,8	6.4V
9~11	0V
12~14	6.3V
15,16	5.7V

IC10

1~3	2.4V
4	–15V
5~7	0V
8	15V

IC11

1~3	6.7V
4	–15V
5~7	6.2V
8	15V

IC12

1~8	5.9V
9~11	9.3V
12	0V
13~16	5.9V
17	5.3V
18~20	0V
21,22	5.9V
23	5.4V
24~30	5.9V
31	12V
32	9.3V
33	9.4V
34	9.3V
35~42	5.9V

IC16

1	11.6V
2	5.6V
3	0.6V

	B	C	E
Q1~3	0.7V	0V	0V
Q5	4.2V	4.9V	4.9V
Q21	0.6V	0V	–
Q22	0.4V	5.5V	–
Q23	5.2V	–30.3V	5.6V
Q24	–30.3V	–35.1V	–29.7V
Q26	0V	27.4V	0.6V
Q27	0V	–28V	0.6V
Q28	27.4V	–1.2V	–27.6V
Q29	–	–	–1.2V
Q30	1.2V	28.4V	0V
Q31	–1.2V	–28.6V	0V
Q32	12.7V	12.7V	–17.7V
Q33	13V	0V	13.1V
Q34~37	–	ON : 0.1V OFF : 28.3V	–

VOLTAGE TABLE

(X09-)

IC1

1~3	0V
4	–15.3V
5~7	0V
8	14.9V

IC2~4

1	–15.3V
2~27	0V
28	14.9V

IC5~9,11

1~3	0V
4	–15.3V
5~7	0V
8	14.9V

IC10

1	–15.3V
2~15	0V
16	14.9V

IC12

1	6.7V
2~9	0V
10~14	–6.7V
15	5.2V
16~28	0V

IC13,14

1~17	0V
18	14.9V
19	0V
20	–15.3V

IC15

1~4	0V
5~7	–15.3V
8~11	0V
12~14	14.9V

IC16

4	–15.3V
5~7	0V
8	14.9V

	B	C	E
Q1,2	0V	–	0V
Q3,4	–	–	0V
Q5,6	–0.6V	1.1V	–1.1V
Q7,8	–15V	–	0V
Q9,10	–7.5V	–	0V
Q11	–	–7.5V	–
Q12	–7.5V	–	–
Q13	–	–	–7.5V
Q14	–7.5V	–	–
Q21	15.6V	22V	15V
Q22	16.2V	22	15.6V
Q23	–	–15.3V	–
Q24	–	–	–21.2V
Q25	–	–	–15.3V
Q26	15V	16.2V	14.4V
Q27	–0.6V	–15.8V	–
Q28	13.4V	22V	12.8V
Q29	–	14.9V	–
Q30	0V	–15V	0V
Q32	–17.7V	–7.5V	4.4V
Q34	0V	15V	–
Q35	0.7V	0V	–
Q36	15V	–15.2V	15V
Q37	0V	15V	15V
Q38	2.8V	3.4V	3.4V

(X13-)

IC1

1	0V
2~7	4.8V
8	–5.0V
9	4.9V
10~15	–4.9V
16	4.5V

IC2

1~4	0V
5	4.5V
6	–4.9V
7	–5.0V
8~11	0V
12	–4.9V
13	3.9V
14	4.9V

IC3

1~4	0V
5,6	–4.9V
7	–5.0V
8~11	0V
12	4.4V
13	–4.9V
14	4.9V

IC4

1~4	0V
5~7	–5.0V
8~11	0V
12,13	–4.9V
14	4.9V

IC5

1	3.4V
2	4.2V
3	0V
4	4.7V
5	4.9V
6	0V
7,8	2.2V
10	2.5V
11	0V
12	1.3V
13	1.6V
14	1.2V
15	1.1V
16	2.7V
17	0V
18,19	4.9V
20~22	4.7V

IC6

1	4.9V
2,3	0V
4	4.8V
5	4.9V
6,7	0V
8	4.9V
9	0V
10	4.9V
11,12	0V
13	4.9V

IC7~11

1~3	0V
4	–5.0V
5~7	0V
8	4.9V

	B	C	E
Q1	4.9V	9.2V	5.5V
Q2	–5.0V	–9.7V	–5.5V
Q3	2.8V	4.9V	2.1V
Q4	4.2V	4.8V	4.9V
Q5	0V	4.9V	0V
Q6	0.6V	0V	0V
Q7	0V	4.9V	0V
Q8	4.9V	9.2V	5.5V
Q9	–5.0V	–9.7V	–5.5V

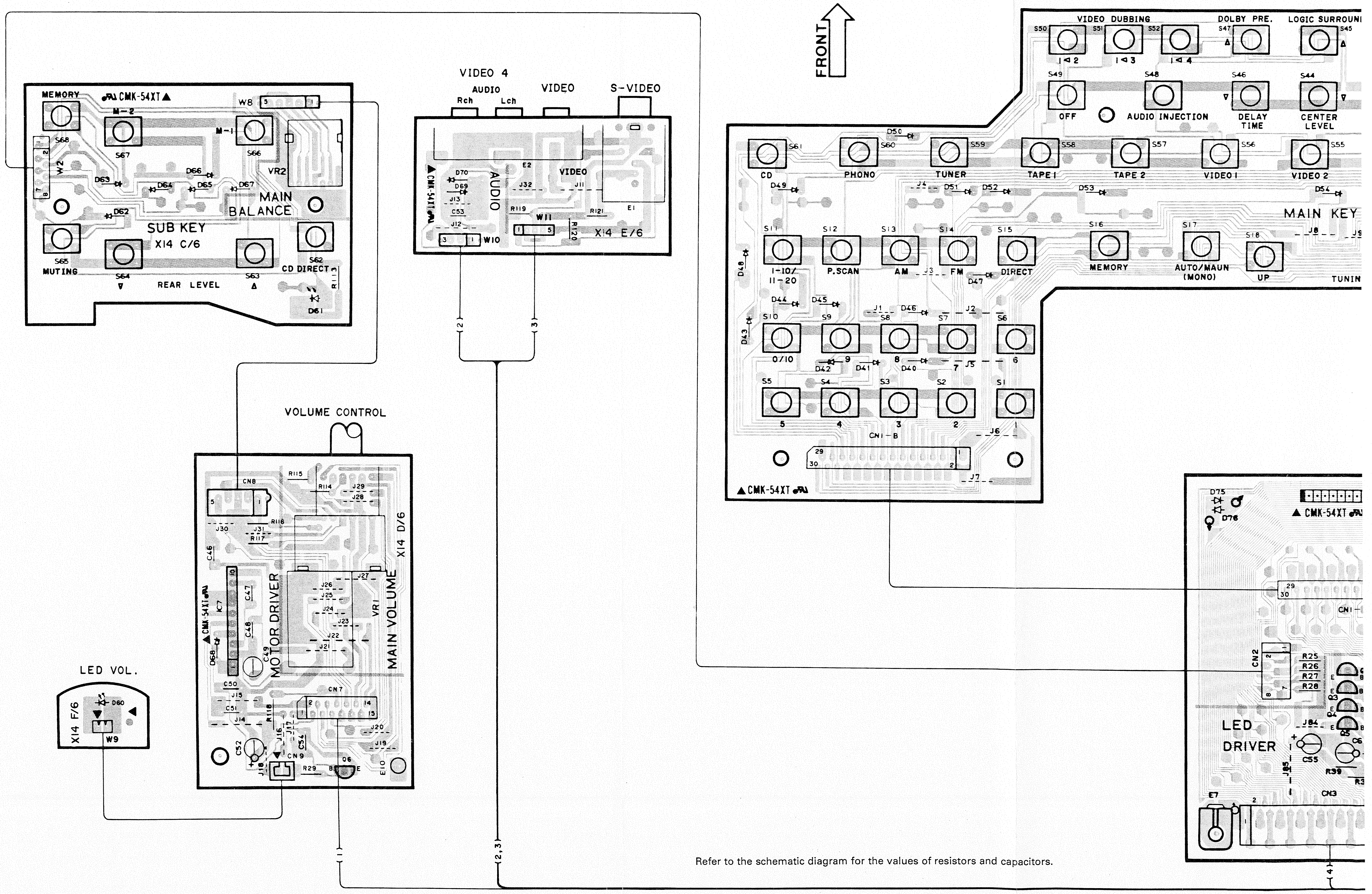
(X89-)

IC1

1~3	0V
4	1.4V
6	0.7V
7	2.2V
8	3.4V

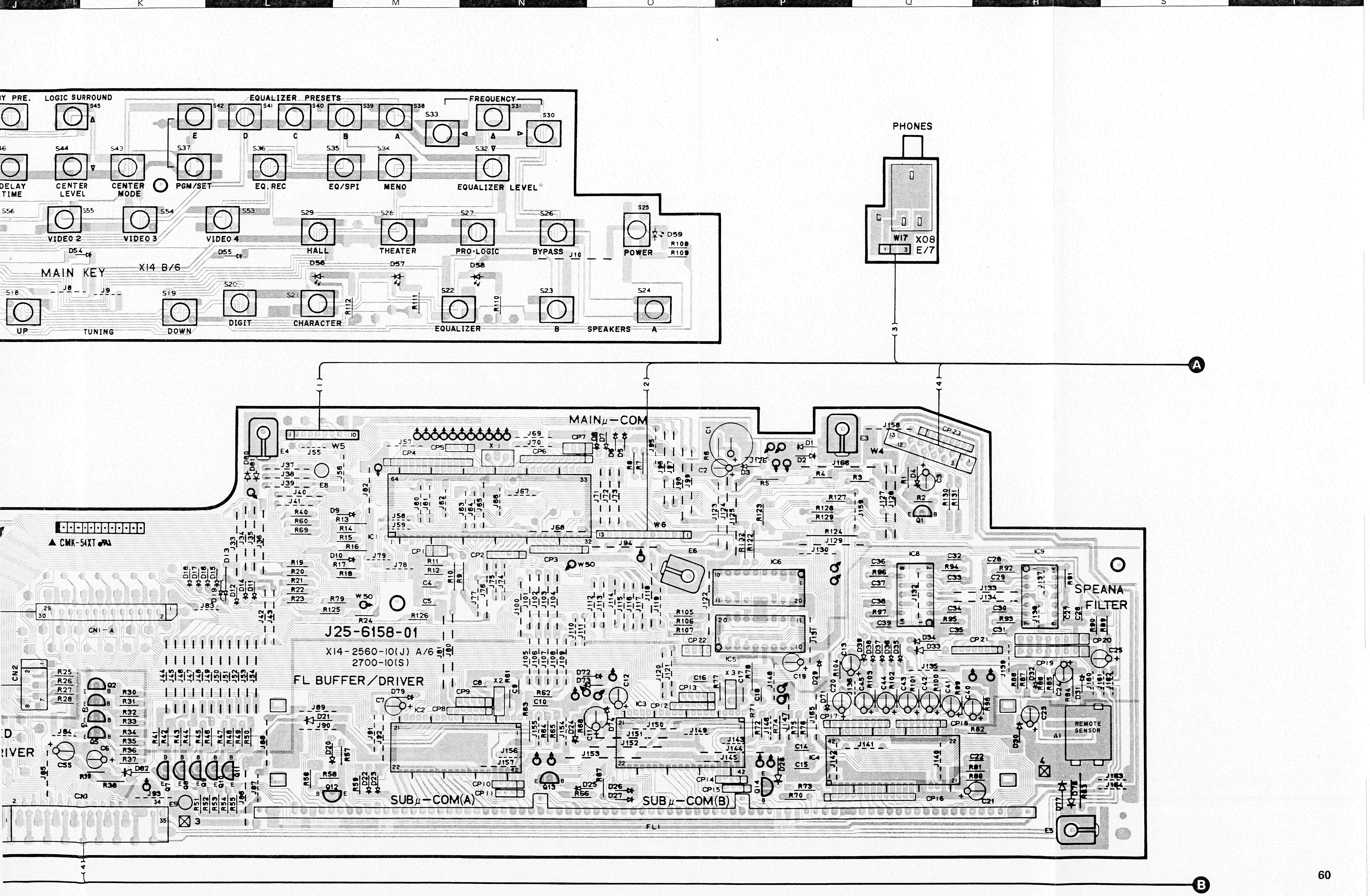
	B	C	E
Q1	0V	3.3V	–0.6V
Q2	–	3.3V	–
Q3	0V	3.3V	–0.6V
Q4	0V	–	–
Q5~7	3.9V	14.6V	3.3V
Q8	3.9V	14.6V	–
Q9	14.6V	A–3.0V	14V
Q10	–	A–3.0V	14V
Q11,12	14.6V	A–3.0V	14V
Q13	A–3.0V	2.2V	A–2.5V
Q14	A–3.0V	0.7V	A–2.5V
Q15	A–3.0V	1.1V	A–2.5V
Q16	–	–	A–2.5V
Q17,18	–	B+2.5V	0.7V
Q19,20	B+2.5V	–1.1V	B+2.5V
Q21,22	1.1V	–	0.6V
Q23,24	–1.1V	–	–0.6V
Q25,26	0V	A–1.3V	0V
Q27,28	0V	–1.0V	0V
Q29	A–1.3V	0V	A-1.3V

PC BOARD (COMPONENT ISDE VIEW)



FRONT
MEMORY
CMK-54XT
M-2
M-1
W8
S68
S67
S66
W2
VR2
D63
D66
D64
D65
D67
MAIN
BALANCE
D62
SUB KEY
X14 C/6
S65
MUTING
S64
REAR LEVEL
S63
S62
CD DIRECT
R113
D61
VIDEO 4
AUDIO
Rch
Lch
VIDEO
S-VIDEO
CMK-54XT
D70
D69
J13
C53
J12
E2
J32
R119
W11
R121
R120
J11
E1
X14 E/6
W10
VOLUME CONTROL
CN8
R115
R114
J29
J28
R116
J30
J31
R117
C46
IC7
C47
C48
D68
C49
MOTOR DRIVER
J26
J25
J24
J23
J22
J21
J27
VR1
MAIN VOLUME
X14 D/6
C50
J15
C51
J14
R118
C52
J16
J17
J18
C54
CN9
CN7
R29
Q6
J20
J19
E10
LED VOL.
X14 F/6
D60
W9
VIDEO DUBBING
DOLBY PRE.
LOGIC SURROUN
S50
S51
S52
S47
S45
2
3
4
S49
S48
S46
S44
OFF
AUDIO INJECTION
DELAY
TIME
CENTER
LEVEL
D50
S61
S60
S59
S58
S57
S56
S55
CD
PHONO
TUNER
TAPE 1
TAPE 2
VIDEO 1
VIDEO 2
D49
J4
D51
D52
D53
D54
MAIN KEY
J8
S11
S12
S13
S14
S15
S16
S17
S18
1-10/
11-20
P.SCAN
AM
J3
FM
D47
DIRECT
MEMORY
AUTO/MAUN
(MONO)
UP
TUNIN
D48
D44
D45
J1
D46
J2
D43
S10
S9
S8
S7
S6
0/10
9
8
7
6
D42
D41
D40
J5
S5
S4
S3
S2
S1
5
4
3
2
1
CN1-B
J6
29
30
J7
CMK-54XT
D75
D76
CMK-54XT
CN1
CN2
R25
R26
R27
R28
Q3
LED
DRIVER
J84
C55
C6
J85
R39
E7
CN3
(2)
(3)
(1)
(2,3)
(4)

Refer to the schematic diagram for the values of resistors and capacitors.


J
K
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M
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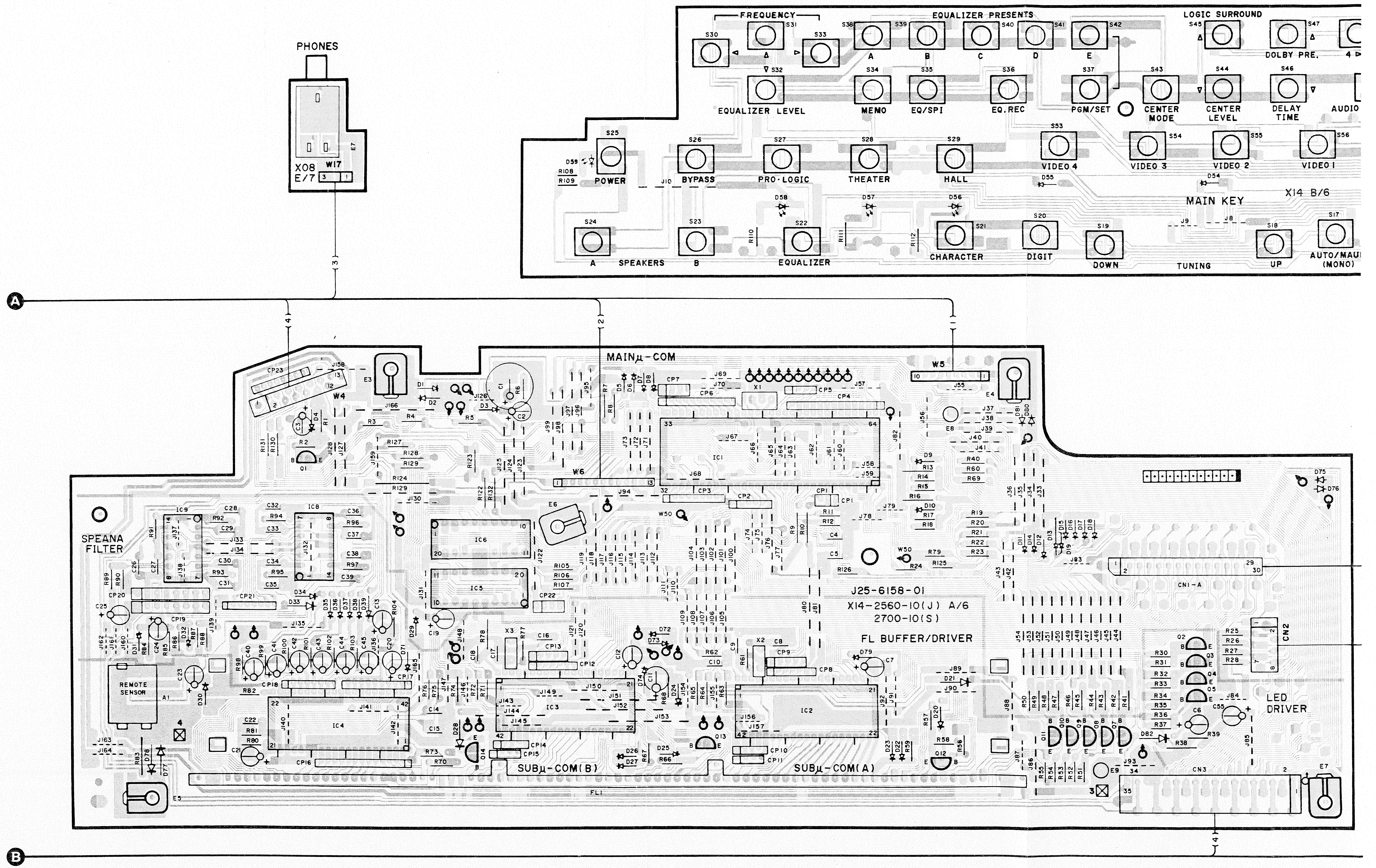
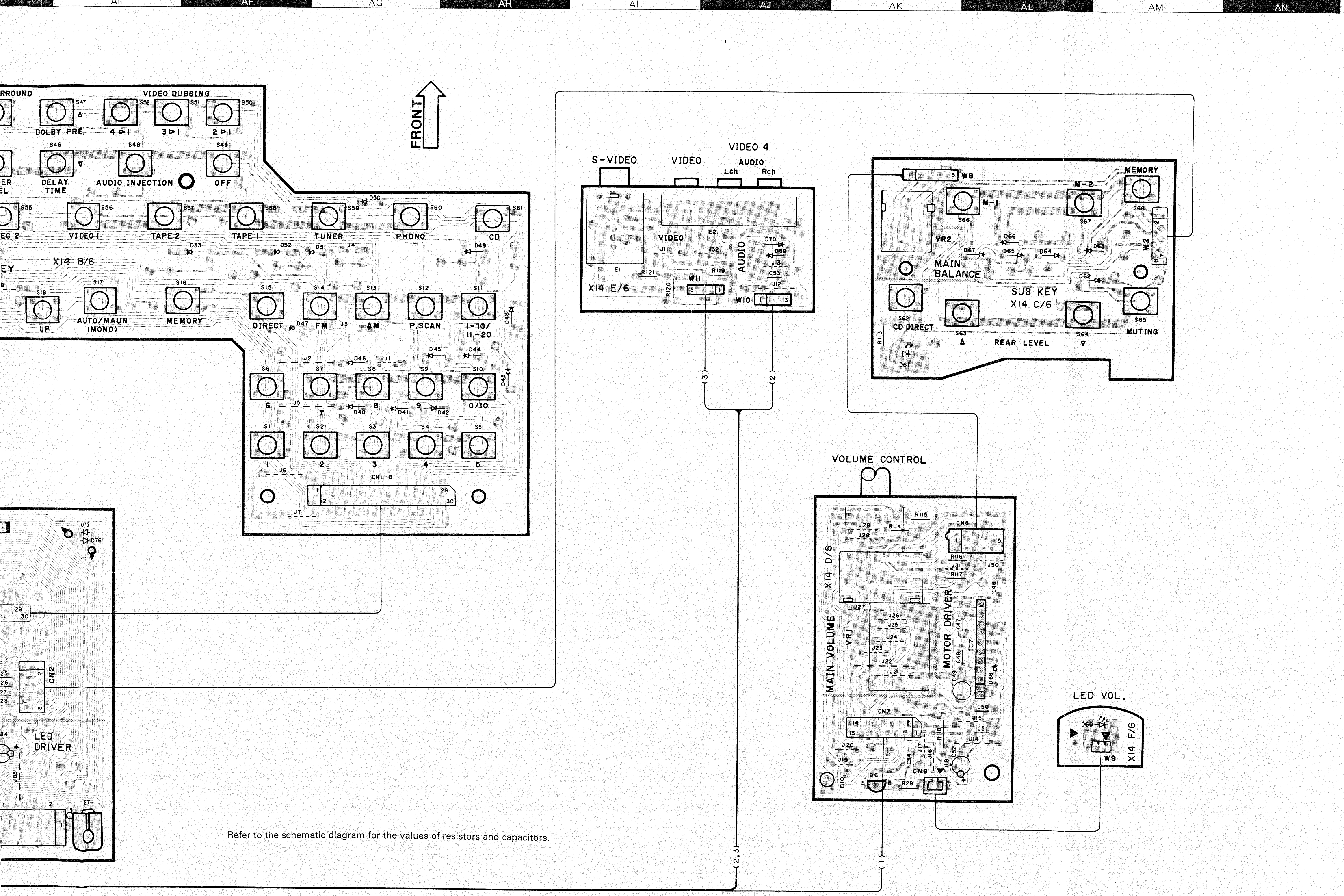
S
T
LOGIC SURROUND
EQUALIZER PRESETS
FREQUENCY
PHONES
DELAY TIME
CENTER LEVEL
CENTER MODE
PGM/SET
EQ.REC
EQ/SPI
MENO
EQUALIZER LEVEL
VIDEO 2
VIDEO 3
VIDEO 4
HALL
THEATER
PRO·LOGIC
BYPASS
POWER
MAIN KEY
X14 B/6
UP
TUNING
DOWN
DIGIT
CHARACTER
EQUALIZER
B
SPEAKERS
A
W17
X08
E/7
MAINμ-COM
CMK-54XT
J25-6158-01
X14-2560-10(J) A/6
2700-10(S)
FL BUFFER/DRIVER
SPEANA FILTER
REMOTE SENSOR
SUBμ-COM(A)
SUBμ-COM(B)
FL1
CN1-A
CN2
CN3
DRIVER
A
B

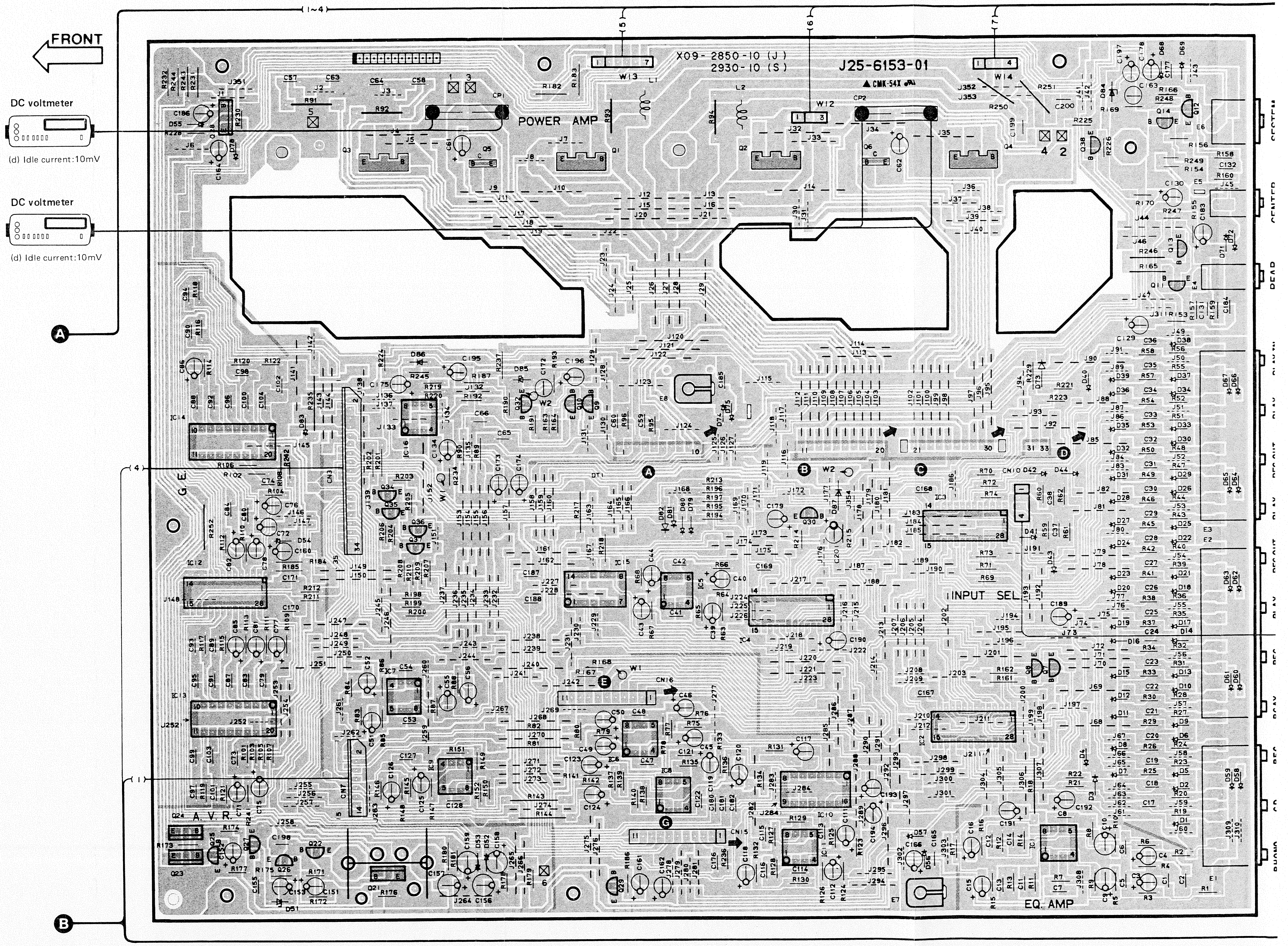
PC BOARD (FOIL SIDE VIEW)

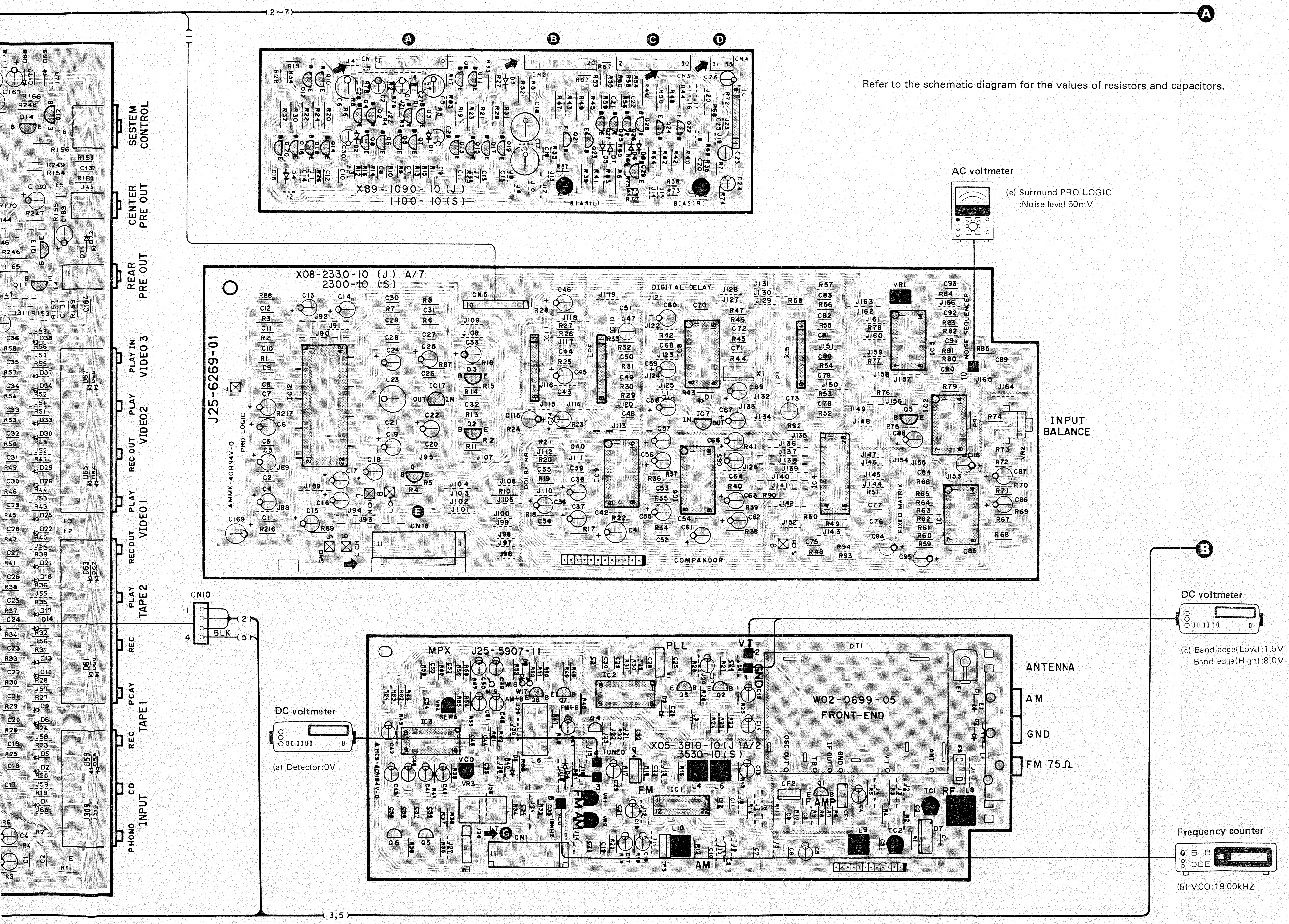

PHONES
X08 E/7
W17
FREQUENCY
EQUALIZER PRESENTS
LOGIC SURROUND
S30
S31
S33
S38
S39
S40
S41
S42
S45
S47
A
B
C
D
E
DOLBY PRE.
S32
S34
S35
S36
S37
S43
S44
S46
EQUALIZER LEVEL
MEMO
EQ/SPI
EQ.REC
PGM/SET
CENTER MODE
CENTER LEVEL
DELAY TIME
AUDIO
S25
S26
S27
S28
S29
S53
S54
S55
S56
POWER
BYPASS
PRO·LOGIC
THEATER
HALL
VIDEO 4
VIDEO 3
VIDEO 2
VIDEO 1
MAIN KEY
X14 B/6
S24
S23
S22
S21
S20
S19
S18
S17
A
SPEAKERS
B
EQUALIZER
CHARACTER
DIGIT
DOWN
TUNING
UP
AUTO/MAN (MONO)
A
MAINμ-COM
W4
W5
W6
IC1
IC2
IC3
IC4
IC5
IC6
IC8
IC9
SPEANA FILTER
REMOTE SENSOR
J25-6158-01
X14-2560-10(J) A/6
2700-10(S)
FL BUFFER/DRIVER
CN1-A
CN2
CN3
LED DRIVER
SUBμ-COM(B)
SUBμ-COM(A)
FL1
B


AE
AF
AG
AH
AI
AJ
AK
AL
AM
AN
FRONT
VIDEO DUBBING
DOLBY PRE.
4 ▷ I
3 ▷ I
2 ▷ I
DELAY TIME
AUDIO INJECTION
OFF
VIDEO I
TAPE 2
TAPE I
TUNER
PHONO
CD
X14 B/6
UP
AUTO/MAUN (MONO)
MEMORY
DIRECT
FM
AM
P.SCAN
1-10/ 11-20
6
7
8
9
0/10
1
2
3
4
5
CN1-B
LED DRIVER
CN2
S-VIDEO
VIDEO
VIDEO 4
AUDIO
Lch
Rch
X14 E/6
W11
W10
MEMORY
M-2
M-1
VR2
MAIN BALANCE
SUB KEY
X14 C/6
CD DIRECT
REAR LEVEL
MUTING
W8
W2
VOLUME CONTROL
X14 D/6
MAIN VOLUME
VR1
MOTOR DRIVER
IC7
CN7
CN8
CN9
LED VOL.
X14 F/6
W9
(3)
(2)
(2,3)
(1)

Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (COMPONENT ISDE VIEW)


FRONT
DC voltmeter
(d) Idle current:10mV
DC voltmeter
(d) Idle current:10mV
(1~4)
(5)
(6)
(7)
(4)
(1)
A
B
X09-2850-10 (J)
2930-10 (S)
J25-6153-01
CMK-54X
POWER AMP
W13
W12
W14
CP1
CP2
Q1
Q2
Q3
Q4
Q5
Q6
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
CN3
CN7
CN15
CN16
A.V.R.
INPUT SEL
EQ. AMP
G.E.
E1
E2
E3
E4
E5
E6
E7
E8


2~7
A
B
C
D
X89-1090-10 (J)
1100-10 (S)
BIAS(L)
BIAS(R)
SESTEM CONTROL
CENTER PRE OUT
REAR PRE OUT
PLAY IN VIDEO 3
PLAY VIDEO2
REC OUT VIDEO2
PLAY VIDEO1
REC OUT VIDEO1
PLAY TAPE 2
REC TAPE 2
PLAY TAPE1
REC TAPE1
CD INPUT
PHONO INPUT
X08-2330-10 (J) A/7
2300-10 (S)
J25-6269-01
PRO LOGIC
DIGITAL DELAY
DOLBY NR
COMPANDOR
NOISE SEQUENCER
FIXED MATRIX
LPF
INPUT BALANCE
CN5
CN16
CN10
BLK
3,5
MPX
J25-5907-11
PLL
VT
GND
SEPA
VCO
TUNED
FM
AM
IF AMP
RF
W02-0699-05
FRONT-END
X05-3810-10 (J) A/2
3530-10 (S)
ANTENNA
AM
GND
FM 75Ω

Refer to the schematic diagram for the values of resistors and capacitors.

AC voltmeter

(e) Surround PRO LOGIC
:Noise level 60mV

DC voltmeter

(a) Detector:0V

DC voltmeter

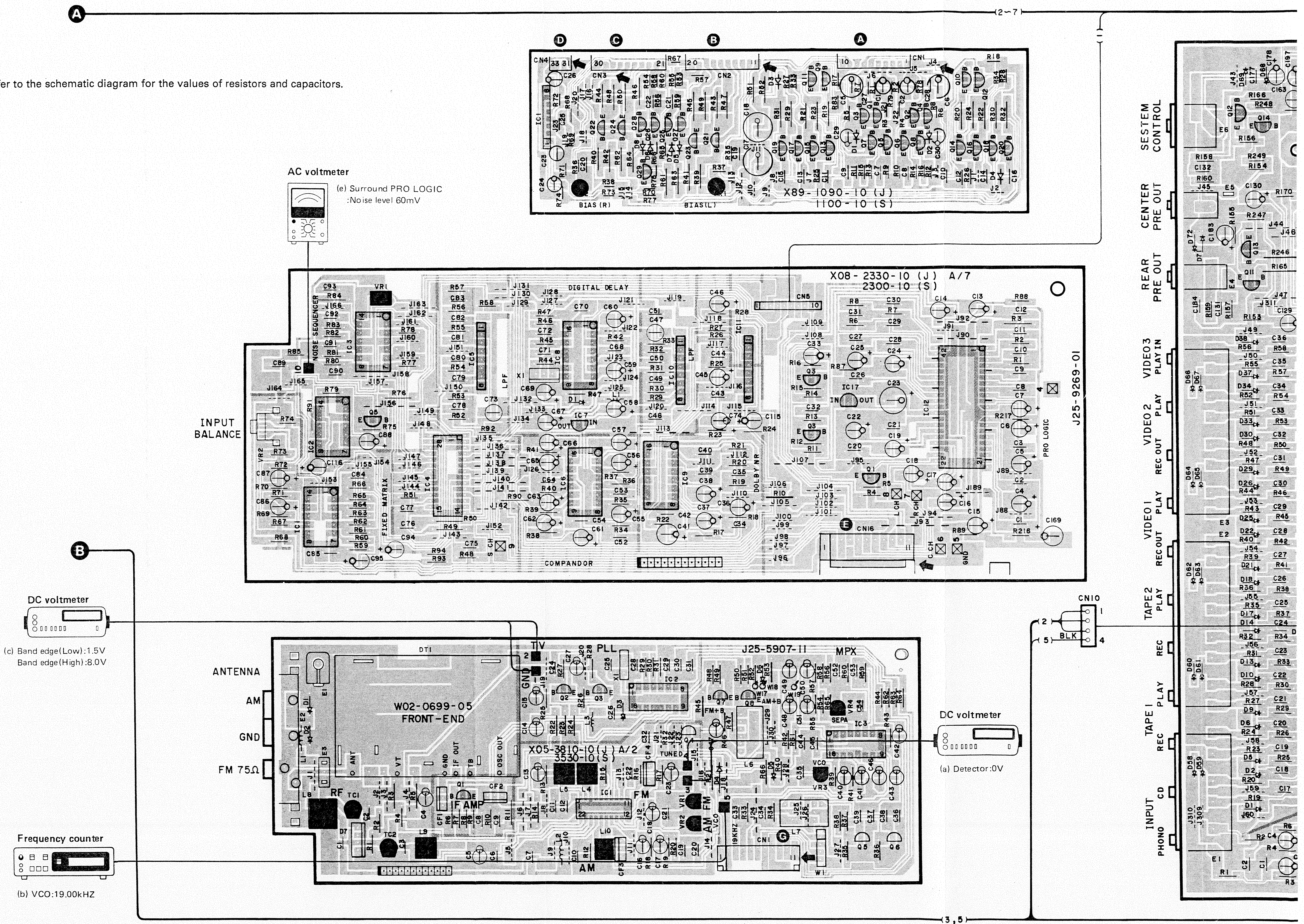
(c) Band edge(Low):1.5V
Band edge(High):8.0V

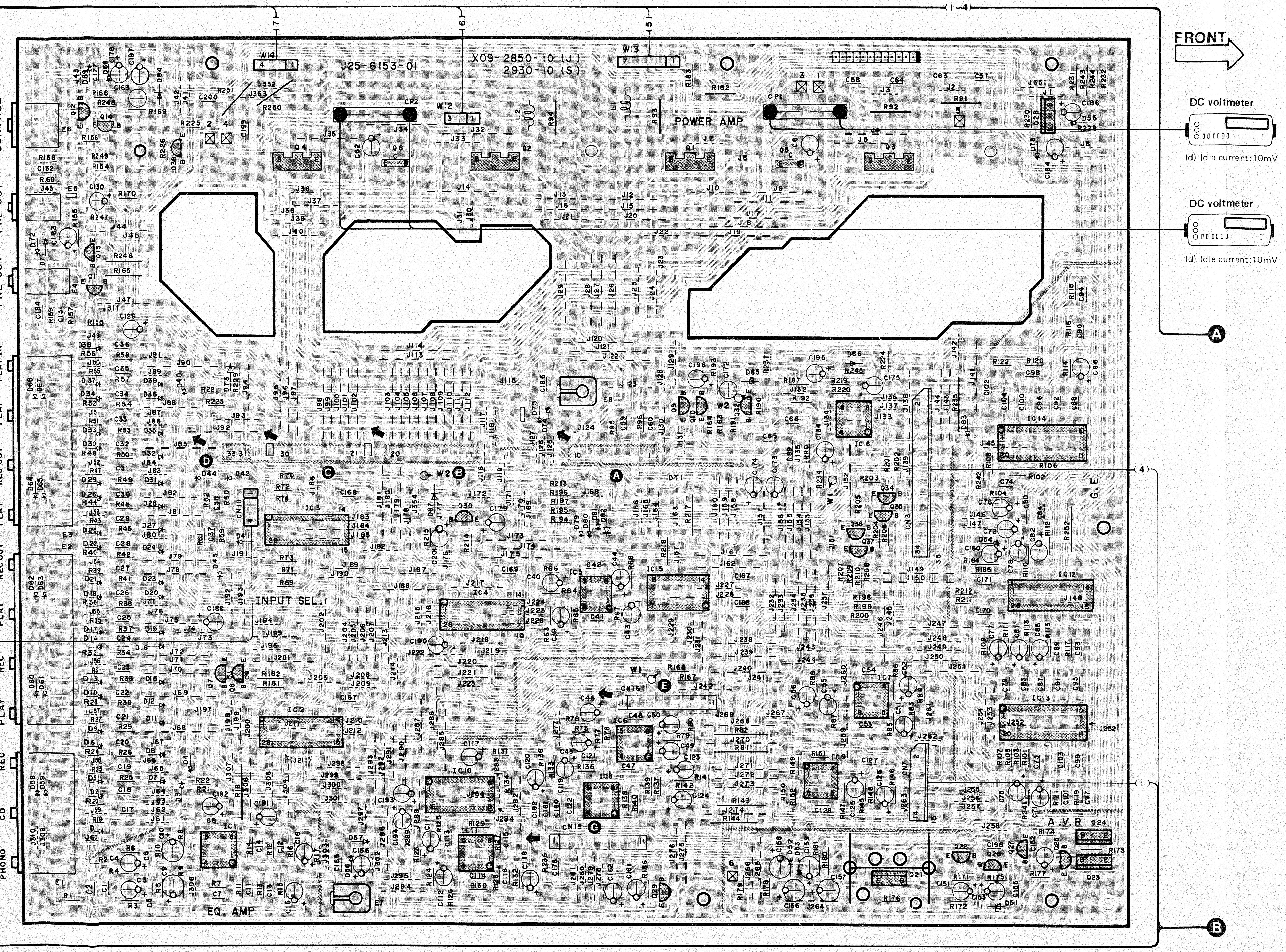
Frequency counter

(b) VCO:19.00kHZ

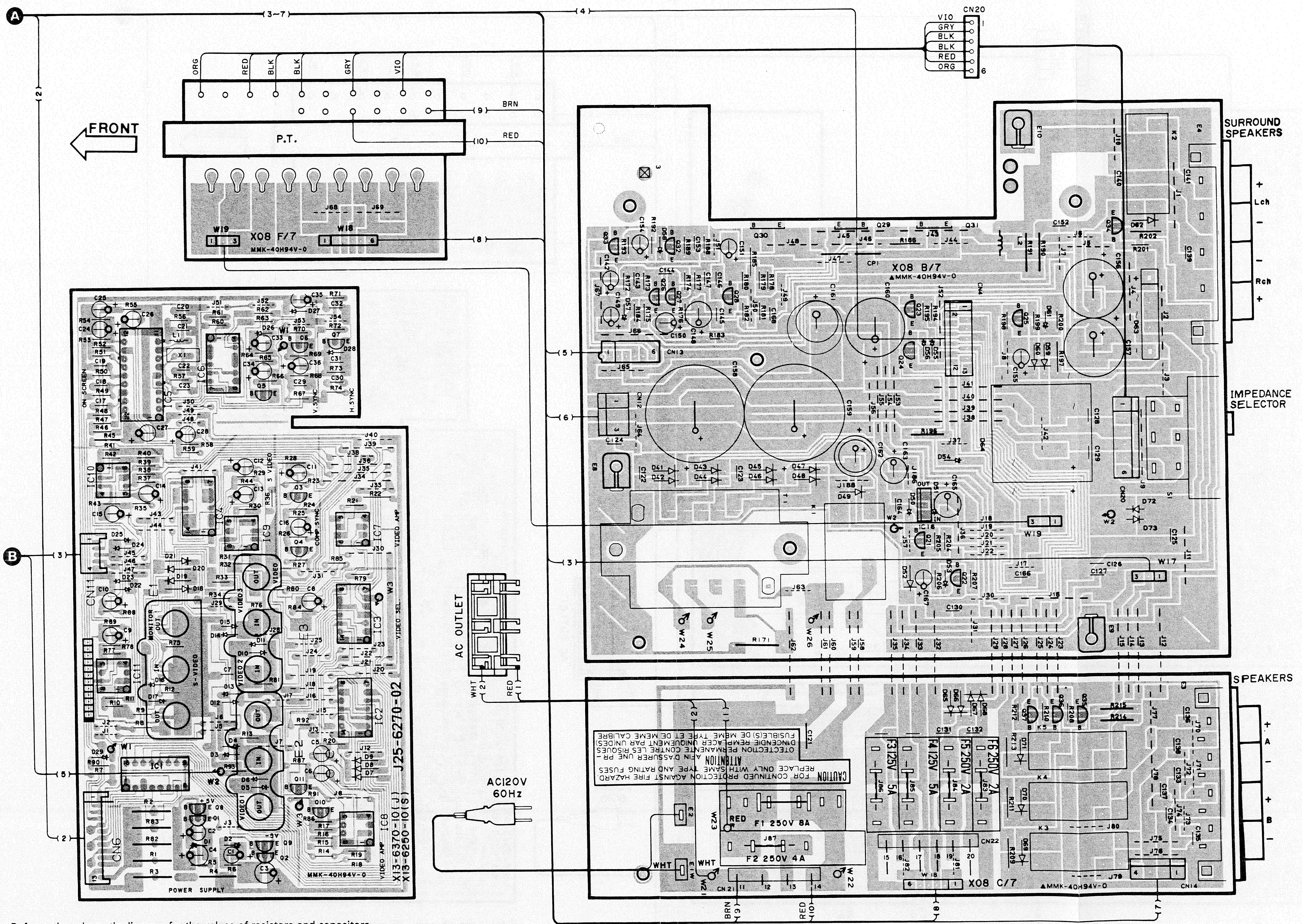
PC BOARD (FOIL SIDE VIEW)

Refer to the schematic diagram for the values of resistors and capacitors.


A
(2-7)
D
C
B
A
CN4
CN3
CN2
CN1
BIAS (R)
BIAS (L)
X89-1090-10 (J)
1100-10 (S)
AC voltmeter
(e) Surround PRO LOGIC
:Noise level 60mV
X08-2330-10 (J) A/7
2300-10 (S)
J25-9269-01
DIGITAL DELAY
NOISE SEQUENCER
FIXED MATRIX
LPF
DOLBY NR
PRO LOGIC
COMPANDOR
CN5
CN16
INPUT
BALANCE
VR1
VR2
IC17
IN
OUT
B
DC voltmeter
(c) Band edge(Low):1.5V
Band edge(High):8.0V
ANTENNA
AM
GND
FM 75Ω
DT1
TV
PLL
J25-5907-11
MPX
W02-0699-05
FRONT-END
X05-3810-10(J) A/2
3530-10(S)
RF
IF AMP
FM
AM
SEPA
TUNED
VCO
19KHZ
CN1
W1
Frequency counter
(b) VCO:19.00kHZ
DC voltmeter
(a) Detector:0V
CN10
BLK
(3,5)
SESTEM CONTROL
CENTER PRE OUT
REAR PRE OUT
VIDEO3 PLAY IN
VIDEO2 PLAY
REC OUT
VIDEO1 PLAY
REC OUT
TAPE2 PLAY
REC
TAPE1 PLAY
REC
INPUT CD
PHONO

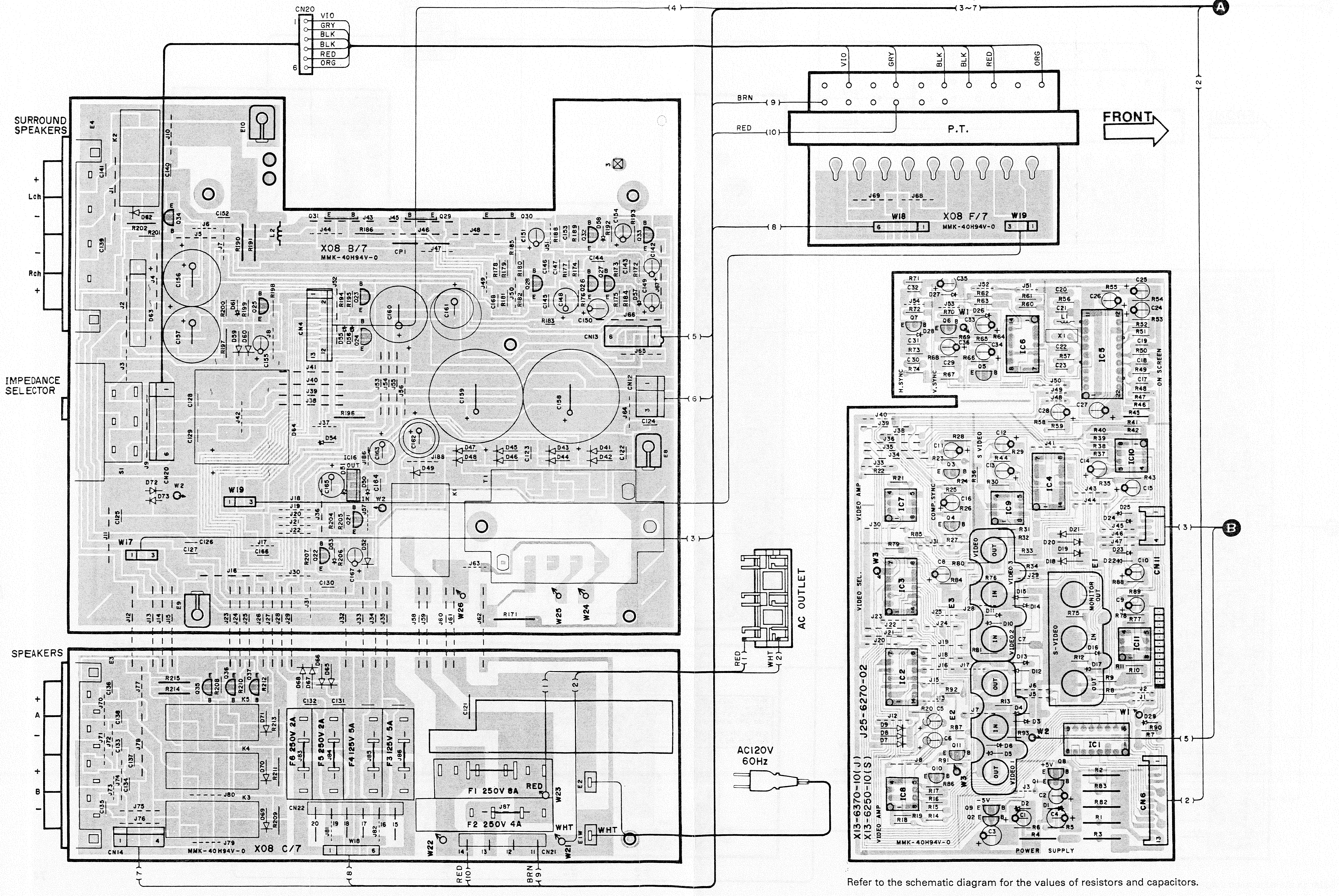

FRONT
X09-2850-10 (J)
2930-10 (S)
J25-6153-01
POWER AMP
INPUT SEL.
EQ. AMP
A.V.R
G.E.
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
Q1
Q2
Q3
Q4
Q5
Q6
CP1
CP2
W1
W2
W12
W13
W14
CN3
CN7
CN10
CN15
CN16
PHONO
CD
REC
PLAY
DC voltmeter
(d) Idle current:10mV
DC voltmeter
(d) Idle current:10mV
A
B
C
D
E
G

PC BOARD (COMPONENT SIDE VIEW)


A
B
FRONT
P.T.
ORG
RED
BLK
BLK
GRY
VIO
BRN
RED
CN20
X08 F/7
MMK-40H94V-0
W19
W18
X08 B/7
MMK-40H94V-0
SURROUND SPEAKERS
Lch
Rch
IMPEDANCE SELECTOR
SPEAKERS
AC OUTLET
WHT
RED
AC120V
60Hz
X08 C/7
MMK-40H94V-0
F1 250V 8A
F2 250V 4A
F3 125V 5A
F4 125V 5A
F5 250V 2A
F6 250V 2A
CAUTION FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACE ONLY WITH SAME TYPE AND RATING FUSES
ATTENTION AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE REMPLACER UNIQUEMENT PAR UNE(S) FUSIBLE(S) DE MEME TYPE ET DE MEME CALIBRE
J25-6270-02
X13-6370-10(J)
X13-6250-10(S)
MMK-40H94V-0
POWER SUPPLY
VIDEO AMP
ON SCREEN
S-VIDEO
MONITOR OUT
VIDEO SEL.
CN11
CN6
IC1
IC2
IC3
IC5
IC6
IC7
IC8
IC9
IC10
IC11

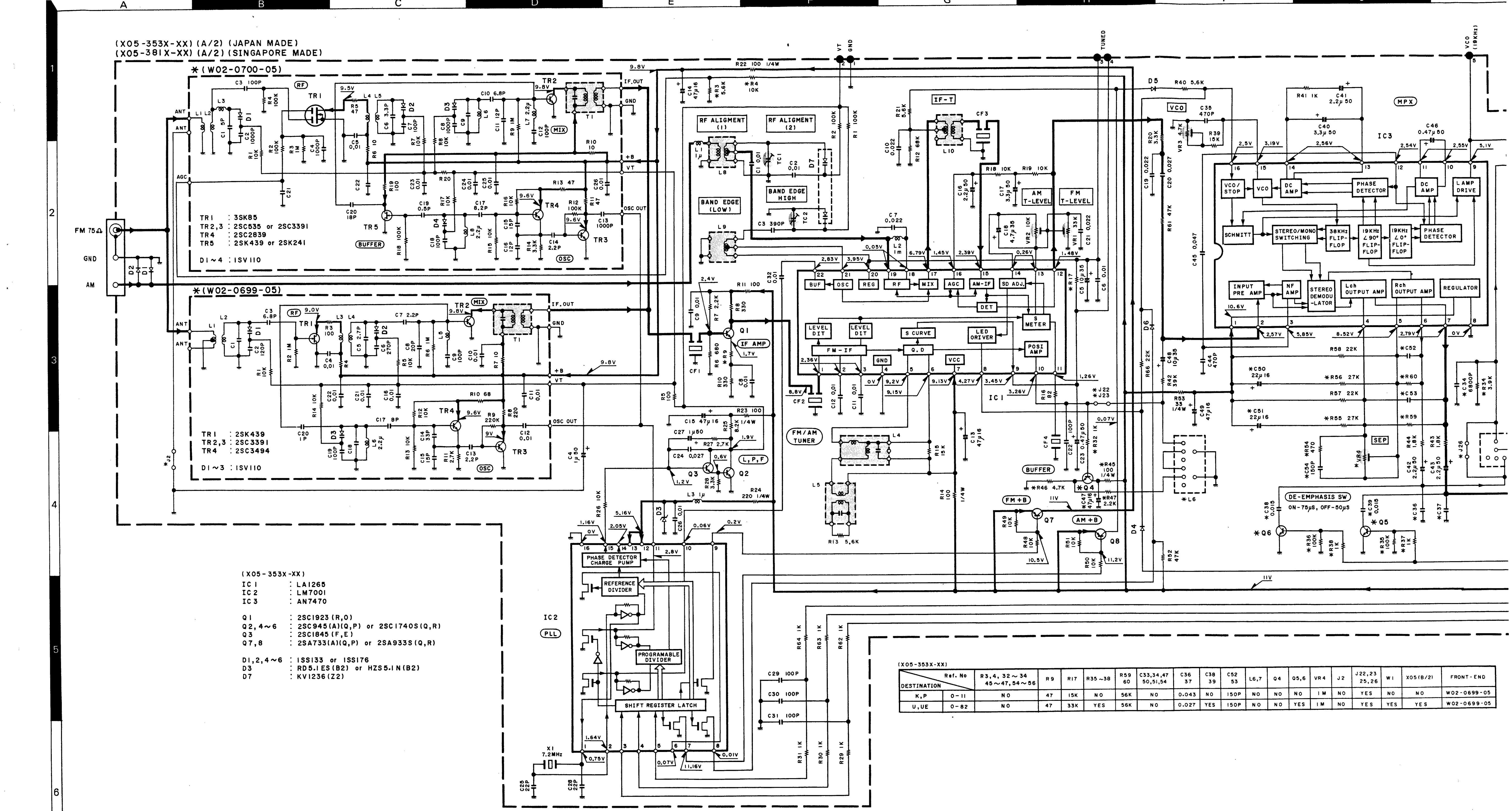
Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (FOIL SIDE VIEW)


CN20
VIO
GRY
BLK
BLK
RED
ORG
A
B
BRN
RED
P.T.
FRONT
SURROUND SPEAKERS
Lch
Rch
IMPEDANCE SELECTOR
SPEAKERS
X08 B/7
MMK-40H94V-0
X08 F/7
MMK-40H94V-0
X08 C/7
MMK-40H94V-0
AC OUTLET
RED
WHT
AC120V 60Hz
F1 250V 8A
F2 250V 4A
F3 125V 5A
F4 125V 5A
F5 250V 2A
F6 250V 2A
J25-6270-02
X13-6370-10(J)
X13-6250-10(S)
VIDEO AMP
VIDEO SEL.
H.SYNC
V.SYNC
ON SCREEN
S VIDEO
COMP. SYNC
VIDEO 1
VIDEO 2
VIDEO 3
S-VIDEO
MONITOR OUT
IN
OUT
+5V
-5V
POWER SUPPLY

Refer to the schematic diagram for the values of resistors and capacitors.

(X05-353X-XX) (A/2) (JAPAN MADE)
(X05-381X-XX) (A/2) (SINGAPORE MADE)


A
B
C
D
E
G
1
2
3
4
5
6
*(W02-0700-05)
RF
TR1
MIX
TR2
T1
BUFFER
TR5
TR4
TR3
OSC
TR1 : 3SK85
TR2,3 : 2SC535 or 2SC3391
TR4 : 2SC2839
TR5 : 2SK439 or 2SK241
D1~4 : 1SV110
*(W02-0699-05)
TR1 : 2SK439
TR2,3 : 2SC3391
TR4 : 2SC3494
D1~3 : 1SV110
IF.OUT
GND
+B
VT
OSC OUT
AGC
ANT
FM 75Ω
GND
AM
9.8V
VT
GND
TUNED
VCO (19KHz)
RF ALIGMENT (1)
RF ALIGMENT (2)
BAND EDGE HIGH
BAND EDGE (LOW)
IF-T
CF3
L10
AM T-LEVEL
FM T-LEVEL
BUF
OSC
REG
RF
MIX
AGC
AM-IF
SD ADJ.
DET
S METER
LEVEL DIT
FM-IF
S CURVE
Q.D
LED DRIVER
POSI AMP
VCC
IC1
IF AMP
Q1
CF1
CF2
L,P,F
Q2
Q3
FM/AM TUNER
L4
L5
BUFFER
FM+B
Q7
AM+B
Q8
*Q4
*L6
VCO
MPX
IC3
VCO/STOP
DC AMP
PHASE DETECTOR
LAMP DRIVE
SCHMITT
STEREO/MONO SWITCHING
38KHz FLIP-FLOP
19KHz ∠90° FLIP-FLOP
19KHz ∠0° FLIP-FLOP
INPUT PRE AMP
NF AMP
STEREO DEMODU-LATOR
Lch OUTPUT AMP
Rch OUTPUT AMP
REGULATOR
SEP
DE-EMPHASIS SW
ON-75μS, OFF-50μS
*Q5
*Q6
IC2
PLL
PHASE DETECTOR CHARGE PUMP
REFERENCE DIVIDER
PROGRAMABLE DIVIDER
SHIFT REGISTER LATCH
X1 7.2MHz
11V

(X05-353X-XX)
IC1 : LA1265
IC2 : LM7001
IC3 : AN7470

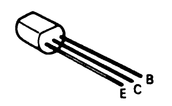
Q1 : 2SC1923(R,O)
Q2,4~6 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
Q3 : 2SC1845(F,E)
Q7,8 : 2SA733(A)(Q,P) or 2SA933S(Q,R)

D1,2,4~6 : 1SS133 or 1SS176
D3 : RD5.1ES(B2) or HZS5.1N(B2)
D7 : KV1236(Z2)

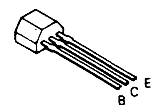
(X05-353X-XX)

DESTINATION	Ref. No	R3,4, 32~34 45~47,54~56	R9	R17	R35~38	R59 60	C33,34,47 50,51,54	C36 37	C38 39	C52 53	L6,7	Q4	Q5,6	VR4	J2	J22,23 25,26	W1	X05(B/2)	FRONT-END
K,P	0-11	NO	47	15K	NO	56K	NO	0.043	NO	150P	NO	NO	NO	1M	NO	YES	NO	NO	W02-0699-05
U,UE	0-82	NO	47	33K	YES	56K	NO	0.027	YES	150P	NO	NO	YES	1M	NO	YES	YES	YES	W02-0699-05

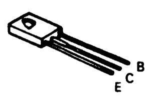
2SA733(A) 2SC1845
2SC1923
2SC2878
2SC945(A)



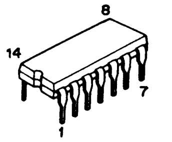
2SA933S
2SC1740S



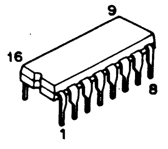
2SB772
2SD882



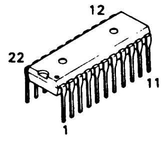
μPD4066BC
μPD4069UBC



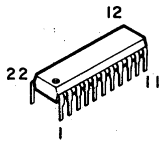
AN7470
μPA80C



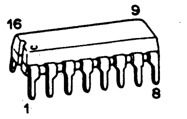
MB88323A-K2



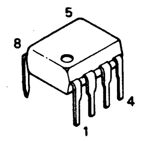
LA1265



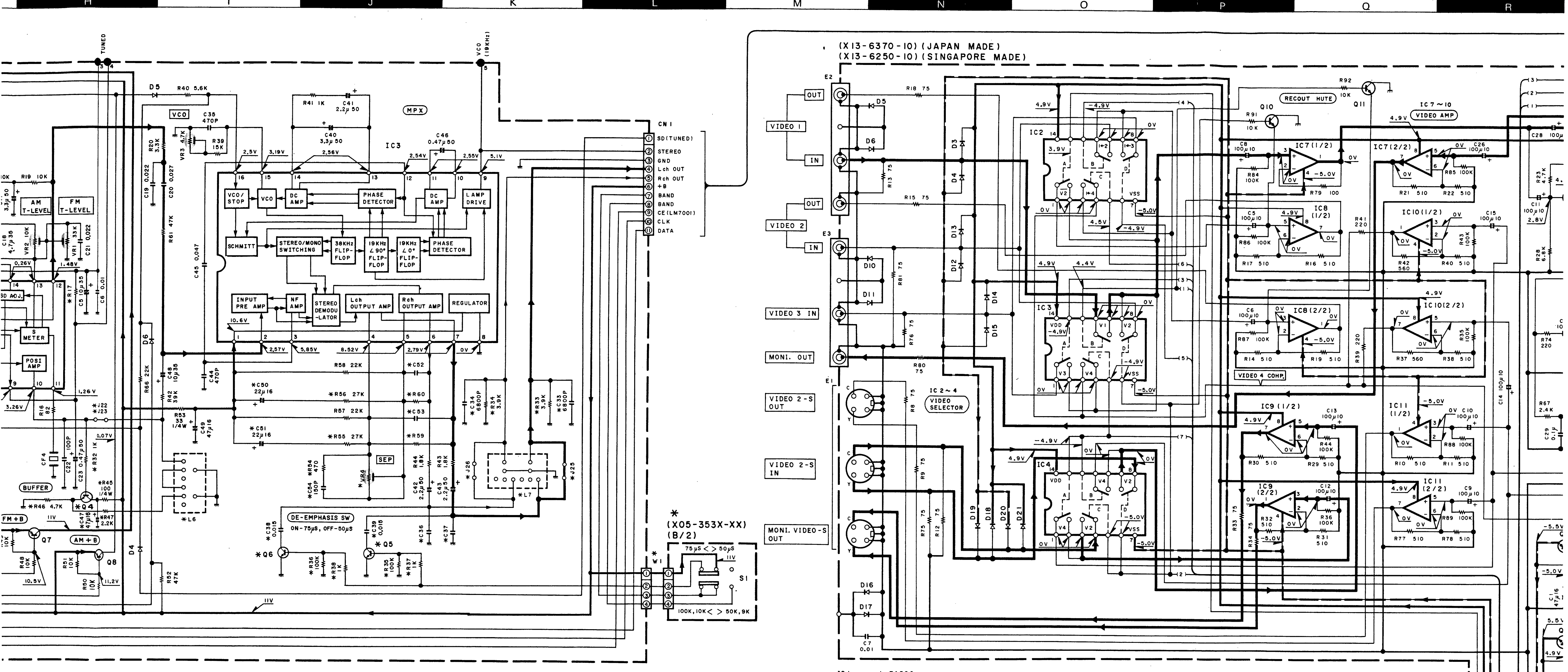
LM7001



MC14577A



CAUTION : For continued s
components only with manuf
(refer to parts list). ⚠ Indi
nents. To reduce the risk of e
or resistance measurements
parts are acceptably insula
before the appliance is retur

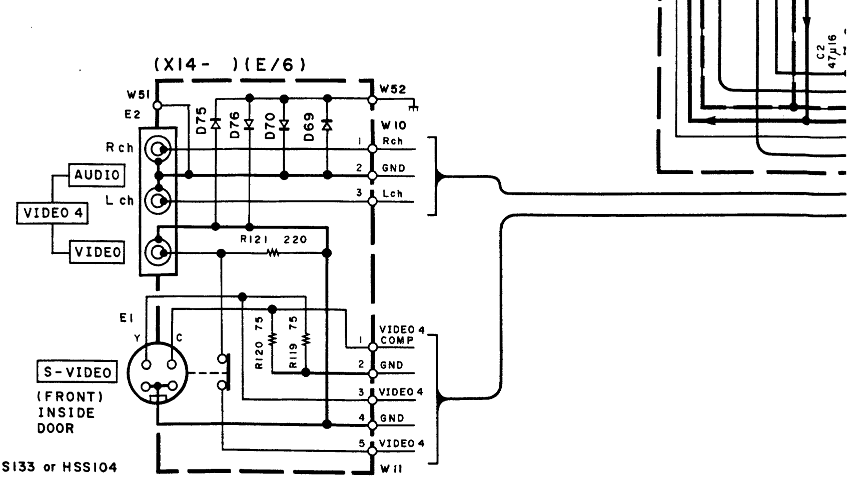

H
I
J
K
L
M
N
O
P
Q
R
TUNED
VCO (19KHz)
D5
R40 5.6K
VCO
C38 470P
MPX
R41 1K
C41 2.2μ 50
C40 3.3μ 50
C46 0.47μ 50
IC3
VCO/STOP
VCO
DC AMP
PHASE DETECTOR
DC AMP
LAMP DRIVE
SCHMITT
STEREO/MONO SWITCHING
38KHz FLIP-FLOP
19KHz ∠90° FLIP-FLOP
19KHz ∠0° FLIP-FLOP
PHASE DETECTOR
INPUT PRE AMP
NF AMP
STEREO DEMODU-LATOR
Lch OUTPUT AMP
Rch OUTPUT AMP
REGULATOR
CN1
① SD(TUNED)
② STEREO
③ GND
④ Lch OUT
⑤ Rch OUT
⑥ +B
⑦ BAND
⑧ BAND
⑨ CE(LM7001)
⑩ CLK
⑪ DATA
AM T-LEVEL
FM T-LEVEL
S METER
POSI AMP
BUFFER
FM+B
AM+B
Q7
Q8
*Q4
SEP
DE-EMPHASIS SW
ON-75μS, OFF-50μS
*Q5
*Q6
*L6
*L7
*
(X05-353X-XX)
(B/2)
75μS < > 50μS
S1
100K,10K < > 50K,9K
*W1
(X13-6370-10) (JAPAN MADE)
(X13-6250-10) (SINGAPORE MADE)
E2
E3
E1
VIDEO 1
VIDEO 2
VIDEO 3 IN
MONI. OUT
VIDEO 2-S OUT
VIDEO 2-S IN
MONI. VIDEO-S OUT
OUT
IN
IC2~4 VIDEO SELECTOR
IC2
IC3
IC4
RECOUT MUTE
Q10
Q11
IC7~10 VIDEO AMP
IC7(1/2)
IC7(2/2)
IC8(1/2)
IC8(2/2)
IC9(1/2)
IC9(2/2)
IC10(1/2)
IC10(2/2)
IC11(1/2)
IC11(2/2)
VIDEO 4 COMP.
C7 0.01
11V
4.9V
-4.9V
-5.0V
0V

2~34 7,54~56	R9	R17	R35~38	R59 60	C33,34,47 50,51,54	C36 37	C38 39	C52 53	L6,7	Q4	Q5,6	VR4	J2	J22,23 25,26	W1	X05(B/2)	FRONT-END
0	47	15K	NO	56K	NO	0.043	NO	150P	NO	NO	NO	1M	NO	YES	NO	NO	W02-0699-05
0	47	33K	YES	56K	NO	0.027	YES	150P	NO	NO	YES	1M	NO	YES	YES	YES	W02-0699-05

▬▬▬	SIGNAL LINE
───	GND LINE
━━━	+B LINE
▬ ▬ ▬	−B LINE

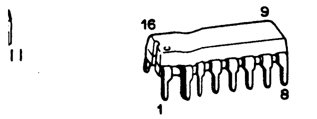
IC1 : μPA80C
IC2~4 : μPD4066BC
IC5 : MB88323A-K2
IC6 : μPD4069UBC
IC7~11 : MC14577A

Q1, 8 : 2SD882(Q,P)
Q2, 9 : 2SB772(Q,P)
Q3, 5~7 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
Q4 : 2SA733(A)(Q,P) or 2SA933S(Q,R)
Q10, 11 : 2SC2878(B)
D1, 2 : RD5.6ES(B2) or HZS5.6N(B2)
D3~29 : 1SS133 or HSS104

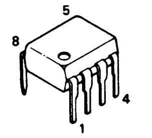

(X14-)(E/6)
W51
W52
E2
Rch
Lch
AUDIO
VIDEO 4
VIDEO
D75
D76
D70
D69
W10
1 Rch
2 GND
3 Lch
R121 220
E1
Y
C
R120 75
R119 75
S-VIDEO
(FRONT) INSIDE DOOR
1 VIDEO 4 COMP
2 GND
3 VIDEO 4
4 GND
5 VIDEO 4
W11

D69,70 : 1SS133 or HSS104

LM7001



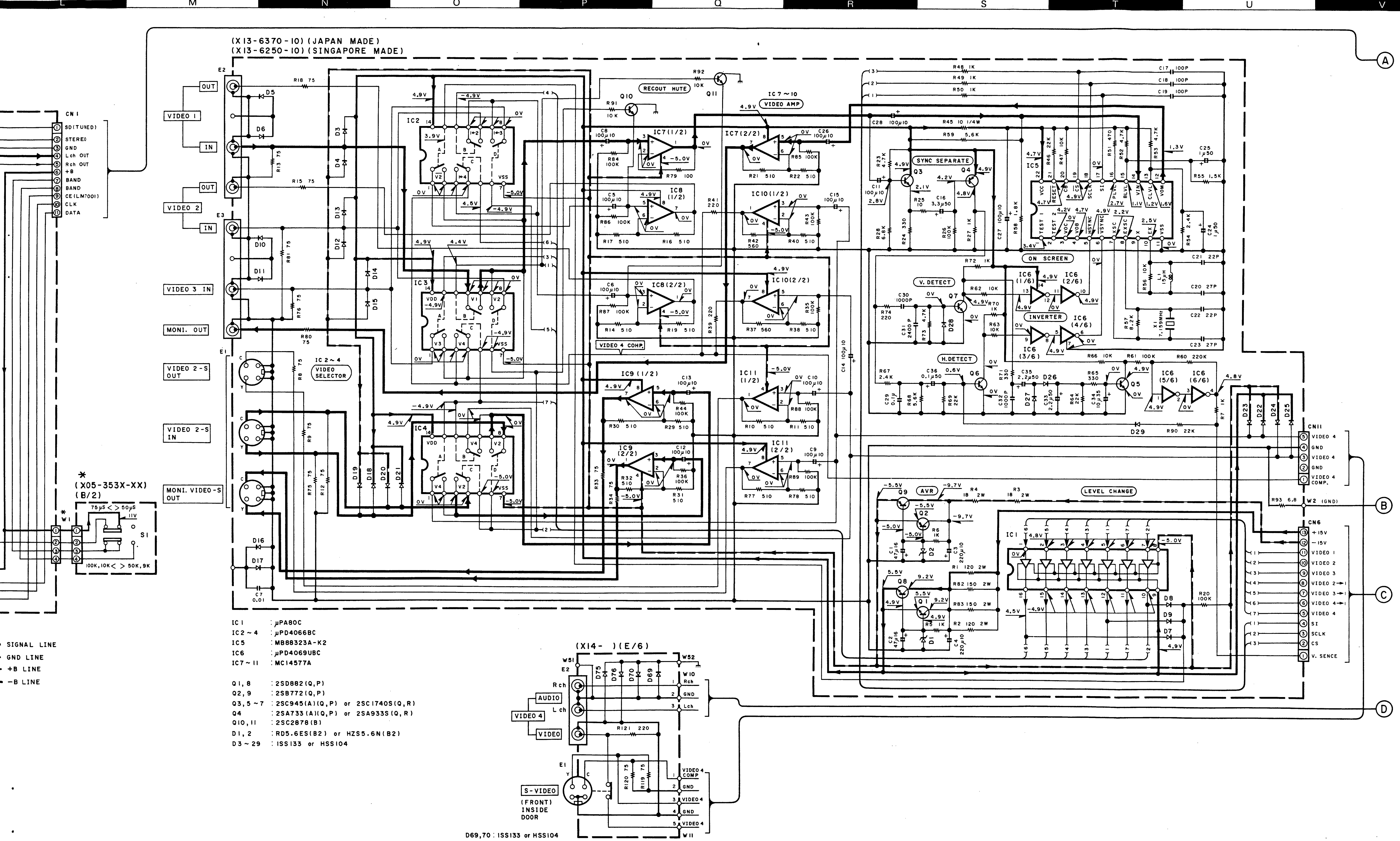
MC14577A



CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être measurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geräten u.U. geringfügig.


L
M
N
O
P
Q
R
S
T
U
V
(X13-6370-10) (JAPAN MADE)
(X13-6250-10) (SINGAPORE MADE)
CN1
① SD(TUNED)
② STEREO
③ GND
④ Lch OUT
⑤ Rch OUT
⑥ +B
⑦ BAND
⑧ BAND
⑨ CE(LM7001)
⑩ CLK
⑪ DATA
VIDEO 1
OUT
IN
VIDEO 2
VIDEO 3 IN
MONI. OUT
VIDEO 2-S OUT
VIDEO 2-S IN
MONI. VIDEO-S OUT
E1
E2
E3
RECOUT MUTE
IC7~10
VIDEO AMP
IC2~4
VIDEO SELECTOR
VIDEO 4 COMP.
SYNC SEPARATE
ON SCREEN
V. DETECT
INVERTER
H. DETECT
AVR
LEVEL CHANGE
IC1
IC5
CN11
⑤ VIDEO 4
④ GND
③ VIDEO 4
② GND
① VIDEO 4 COMP.
W2 (GND)
CN6
⑬ +15V
⑫ -15V
⑪ VIDEO 1
⑩ VIDEO 2
⑨ VIDEO 3
⑧ VIDEO 2→I
⑦ VIDEO 3→I
⑥ VIDEO 4→I
⑤ VIDEO 4
④ SI
③ SCLK
② CS
① V. SENCE
A
B
C
D
*
(X05-353X-XX)
(B/2)
W1
75μS < > 50μS
S1
100K,10K < > 50K,9K
(X14-)(E/6)
W51
W52
W10
W11
Rch
Lch
AUDIO
VIDEO 4
VIDEO
S-VIDEO
(FRONT)
INSIDE
DOOR

IC1 : μPA80C
IC2~4 : μPD4066BC
IC5 : MB88323A-K2
IC6 : μPD4069UBC
IC7~11 : MC14577A

Q1, 8 : 2SD882(Q,P)
Q2, 9 : 2SB772(Q,P)
Q3, 5~7 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
Q4 : 2SA733(A)(Q,P) or 2SA933S(Q,R)
Q10, 11 : 2SC2878(B)
D1, 2 : RD5.6ES(B2) or HZS5.6N(B2)
D3~29 : ISS133 or HSS104

D69,70 : ISS133 or HSS104

SIGNAL LINE
GND LINE
+B LINE
-B LINE

safety critical
ımended parts
ritical compo-
akage-current
l out (exposed
supply circuit)
tomer.

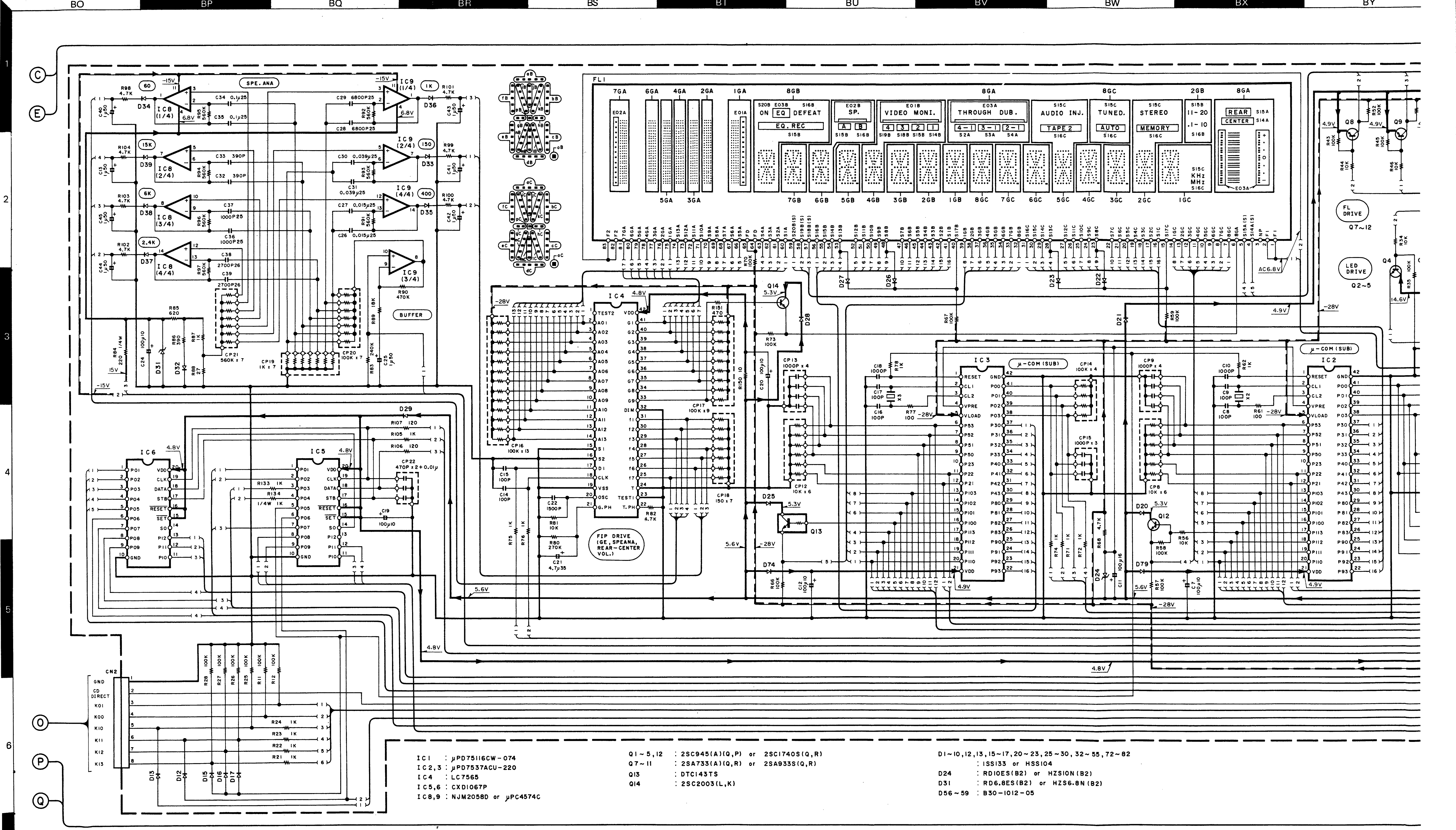
- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être measurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geräten u.U. geringfügig.

Y05-2440-10

KR-V9010

KENWOOD

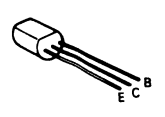

BO
BP
BQ
BR
BS
BT
BU
BV
BW
BX
BY
1
2
3
4
5
6
7
C
E
O
P
Q
SPE. ANA
BUFFER
IC8 (1/4)
IC8 (2/4)
IC8 (3/4)
IC8 (4/4)
IC9 (1/4)
IC9 (2/4)
IC9 (3/4)
IC9 (4/4)
60
15K
6K
2.4K
1K
150
400
FL1
IC4
FIP DRIVE (GE, SPEANA, REAR-CENTER VOL.)
IC3
μ-COM (SUB)
IC2
μ-COM (SUB)
IC5
IC6
CN2
GND
CD DIRECT
KO1
KO0
KI0
KI1
KI2
KI3
FL DRIVE
Q7~12
LED DRIVE
Q2~5
Q4
Q8
Q9
Q12
Q13
Q14
-15V
-28V
4.8V
4.9V
5.3V
5.6V
6.8V
14.6V
AC6.8V
ON
EQ
DEFEAT
EQ. REC
SP.
A
B
VIDEO MONI.
THROUGH DUB.
AUDIO INJ.
TAPE 2
TUNED.
AUTO
STEREO
MEMORY
11-20
.1-10
REAR
CENTER
KHz
MHz

IC1 : μPD75116CW-074
IC2,3 : μPD7537ACU-220
IC4 : LC7565
IC5,6 : CXD1067P
IC8,9 : NJM2058D or μPC4574C

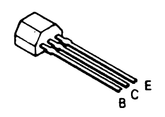
Q1~5,12 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
Q7~11 : 2SA733(A)(Q,R) or 2SA933S(Q,R)
Q13 : DTC143TS
Q14 : 2SC2003(L,K)

D1~10,12,13,15~17,20~23,25~30,32~55,72~82
: 1SS133 or HSS104
D24 : RD10ES(B2) or HZS10N(B2)
D31 : RD6.8ES(B2) or HZS6.8N(B2)
D56~59 : B30-1012-05

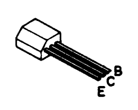
2SA733(A)
2SC945(A)



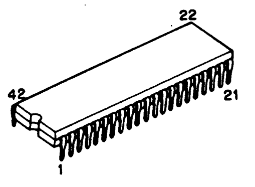
2SA933S
2SC1740S



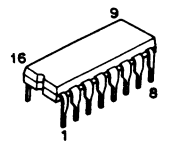
DTC143TS



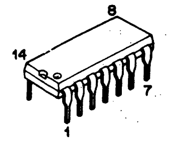
μPD7537ACU-220



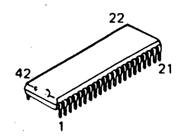
UPC4574C



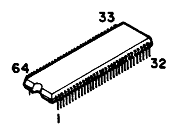
NJM2058D



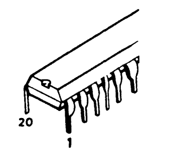
LC7565

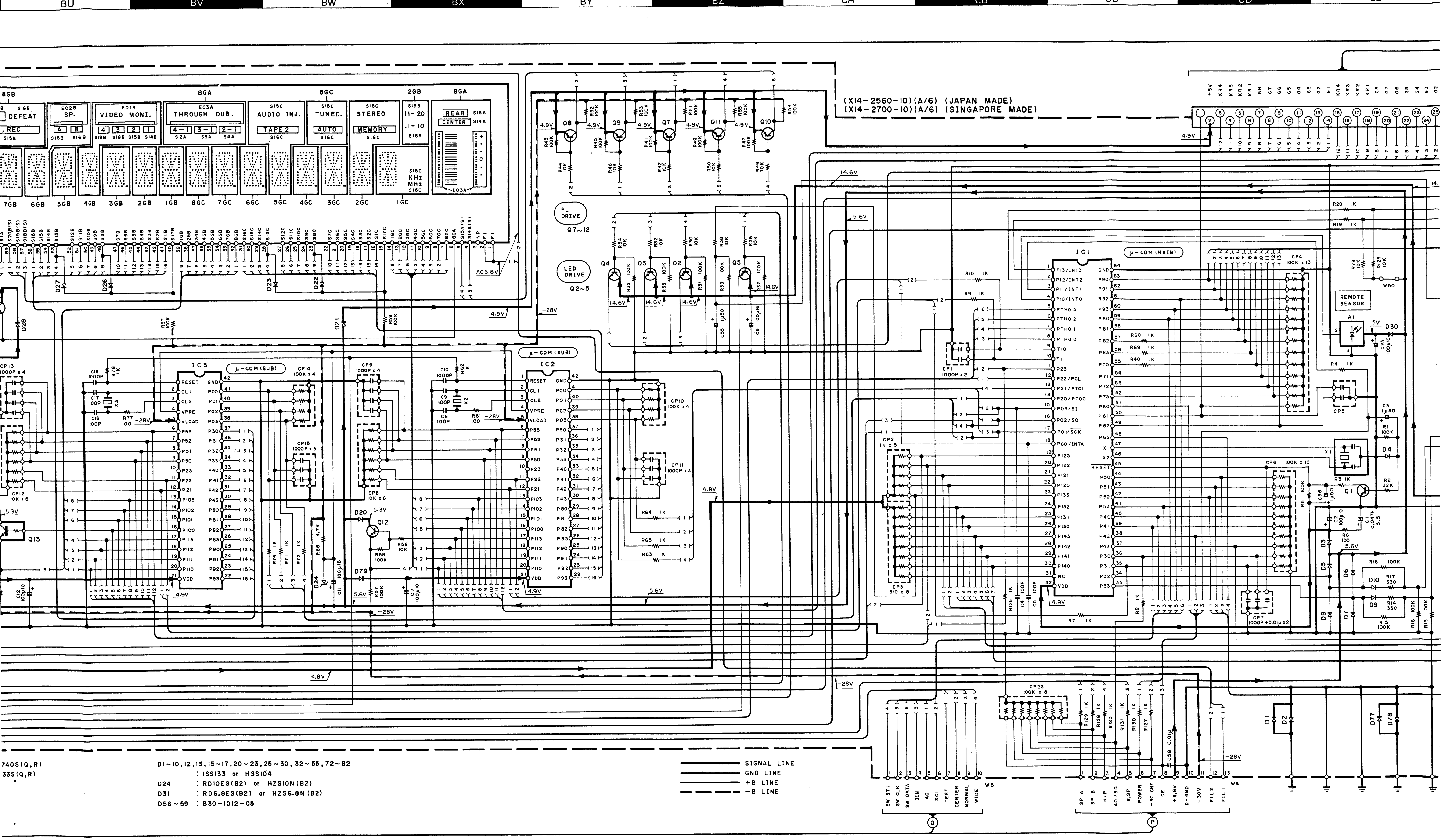


μPD75116CW-074



CXD1067P



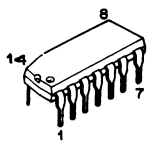

BU
BV
BW
BX
BY
BZ
CA
CB
CC
CD
CE
8GB
8GA
8GC
2GB
DEFEAT
SP.
VIDEO MONI.
THROUGH DUB.
AUDIO INJ.
TUNED.
STEREO
REAR
CENTER
.REC
A
B
4-1
3-1
2-1
TAPE 2
AUTO
MEMORY
11-20
.1-10
KHz
MHz
E03A
7GB
6GB
5GB
4GB
3GB
2GB
1GB
8GC
7GC
6GC
5GC
4GC
3GC
2GC
1GC
(X14-2560-10)(A/6) (JAPAN MADE)
(X14-2700-10)(A/6) (SINGAPORE MADE)
FL DRIVE
Q7~12
LED DRIVE
Q2~5
Q8
Q9
Q7
Q11
Q10
Q4
Q3
Q2
Q5
IC1
μ-COM (MAIN)
IC2
μ-COM (SUB)
IC3
μ-COM (SUB)
REMOTE SENSOR
A1
D30
Q1
Q12
Q13
CP1 1000P x 2
CP2 1K x 5
CP3 510 x 8
CP4 100K x 13
CP5
CP6 100K x 10
CP7 1000P + 0.01μ x2
CP8 10K x 6
CP9 1000P x 4
CP10 100K x 4
CP11 1000P x 3
CP12 10K x 6
CP13 1000P x 4
CP14 100K x 4
CP15 1000P x 3
CP23 100K x 8
AC6.8V
14.6V
5.6V
4.9V
4.8V
5.3V
-28V
W4
W5
SW ST1
SW CLK
SW DATA
DIN
AO
SC1
TEST
CENTER
NORMAL
WIDE
SP A
SP B
H-P
4Ω/8Ω
R.SP
POWER
-30 CNT
CE
+5.6V
D-GND
-30V
FIL2
FIL1
Q
P

740S(Q,R)
33S(Q,R)

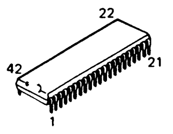
D1~10,12,13,15~17,20~23,25~30,32~55,72~82
: 1SS133 or HSS104
D24 : RD10ES(B2) or HZS10N(B2)
D31 : RD6.8ES(B2) or HZS6.8N(B2)
D56~59 : B30-1012-05

▬	SIGNAL LINE
—	GND LINE
—	+B LINE
- - -	-B LINE

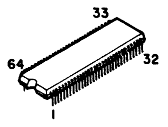
NJM2058D



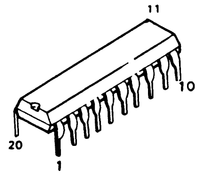
LC7565



μPD75116CW-074



CXD1067P



CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

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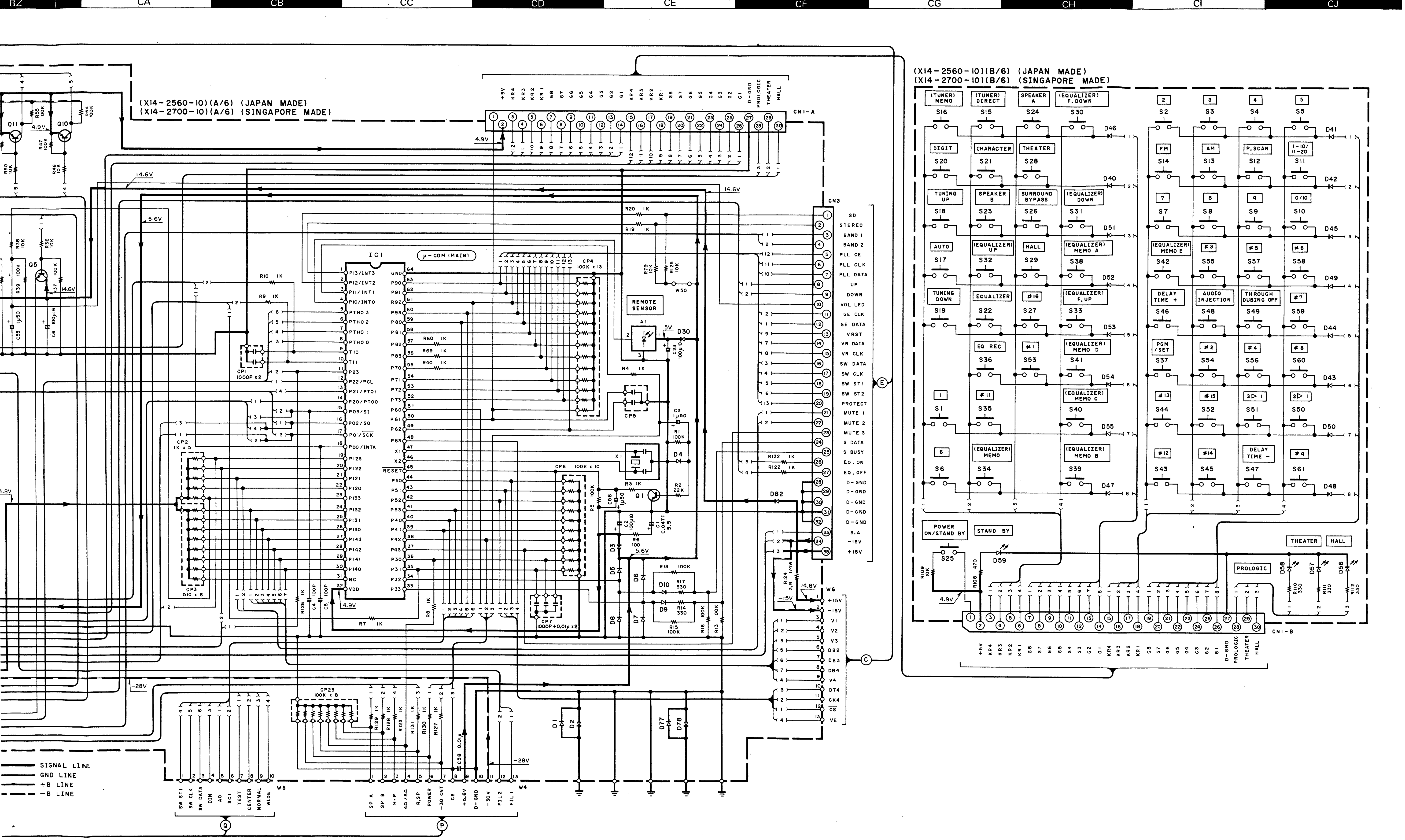
- Die angege
einem hoch
wanken die
zwischen e
geringfügig.


BZ
CA
CB
CC
CD
CE
CF
CG
CH
CI
CJ
(X14-2560-10)(A/6) (JAPAN MADE)
(X14-2700-10)(A/6) (SINGAPORE MADE)
(X14-2560-10)(B/6) (JAPAN MADE)
(X14-2700-10)(B/6) (SINGAPORE MADE)
CN1-A
CN1-B
CN3
IC1
μ-COM (MAIN)
REMOTE SENSOR
A1
Q1
Q5
Q10
Q11
X1
CP1 1000P x 2
CP2 1K x 5
CP3 510 x 8
CP4 100K x 13
CP5
CP6 100K x 10
CP7 1000P + 0.01μ x 2
CP23 100K x 8
W4
W5
W6
SD
STEREO
BAND 1
BAND 2
PLL CE
PLL CLK
PLL DATA
UP
DOWN
VOL LED
GE CLK
GE DATA
VRST
VR DATA
VR CLK
SW DATA
SW CLK
SW ST1
SW ST2
PROTECT
MUTE 1
MUTE 2
MUTE 3
S DATA
S BUSY
EQ. ON
EQ. OFF
D-GND
S.A
-15V
+15V
V1
V2
V3
DB2
DB3
DB4
V4
DT4
CK4
CS
VE
SW ST1
SW CLK
SW DATA
DIN
AO
SC1
TEST
CENTER
NORMAL
WIDE
SP A
SP B
H-P
4Ω/8Ω
R.SP
POWER
-30 CNT
CE
+5.6V
D-GND
-30V
FIL2
FIL1
(TUNER) MEMO
(TUNER) DIRECT
SPEAKER A
(EQUALIZER) F.DOWN
DIGIT
CHARACTER
THEATER
TUNING UP
SPEAKER B
SURROUND BYPASS
(EQUALIZER) DOWN
AUTO
(EQUALIZER) UP
HALL
(EQUALIZER) MEMO A
TUNING DOWN
EQUALIZER
(EQUALIZER) F.UP
EQ REC
(EQUALIZER) MEMO D
(EQUALIZER) MEMO C
(EQUALIZER) MEMO
(EQUALIZER) MEMO B
FM
AM
P.SCAN
1-10/11-20
0/10
(EQUALIZER) MEMO E
DELAY TIME +
AUDIO INJECTION
THROUGH DUBING OFF
PGM /SET
DELAY TIME -
POWER ON/STAND BY
STAND BY
PROLOGIC
SIGNAL LINE
GND LINE
+B LINE
-B LINE

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

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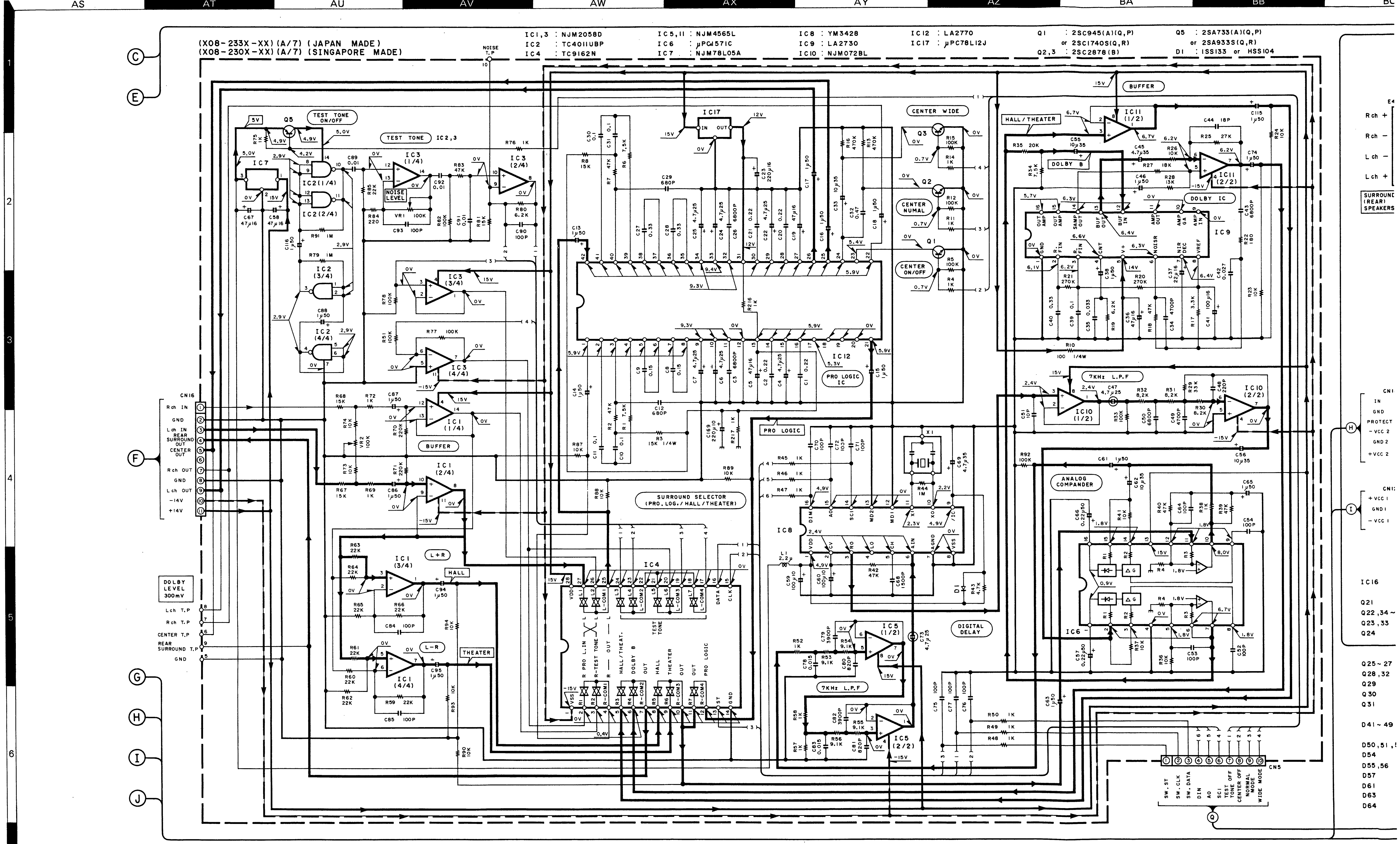
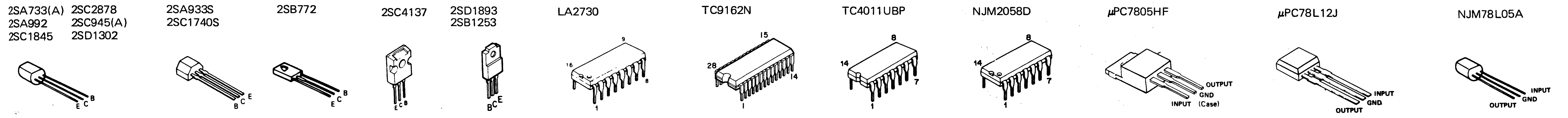
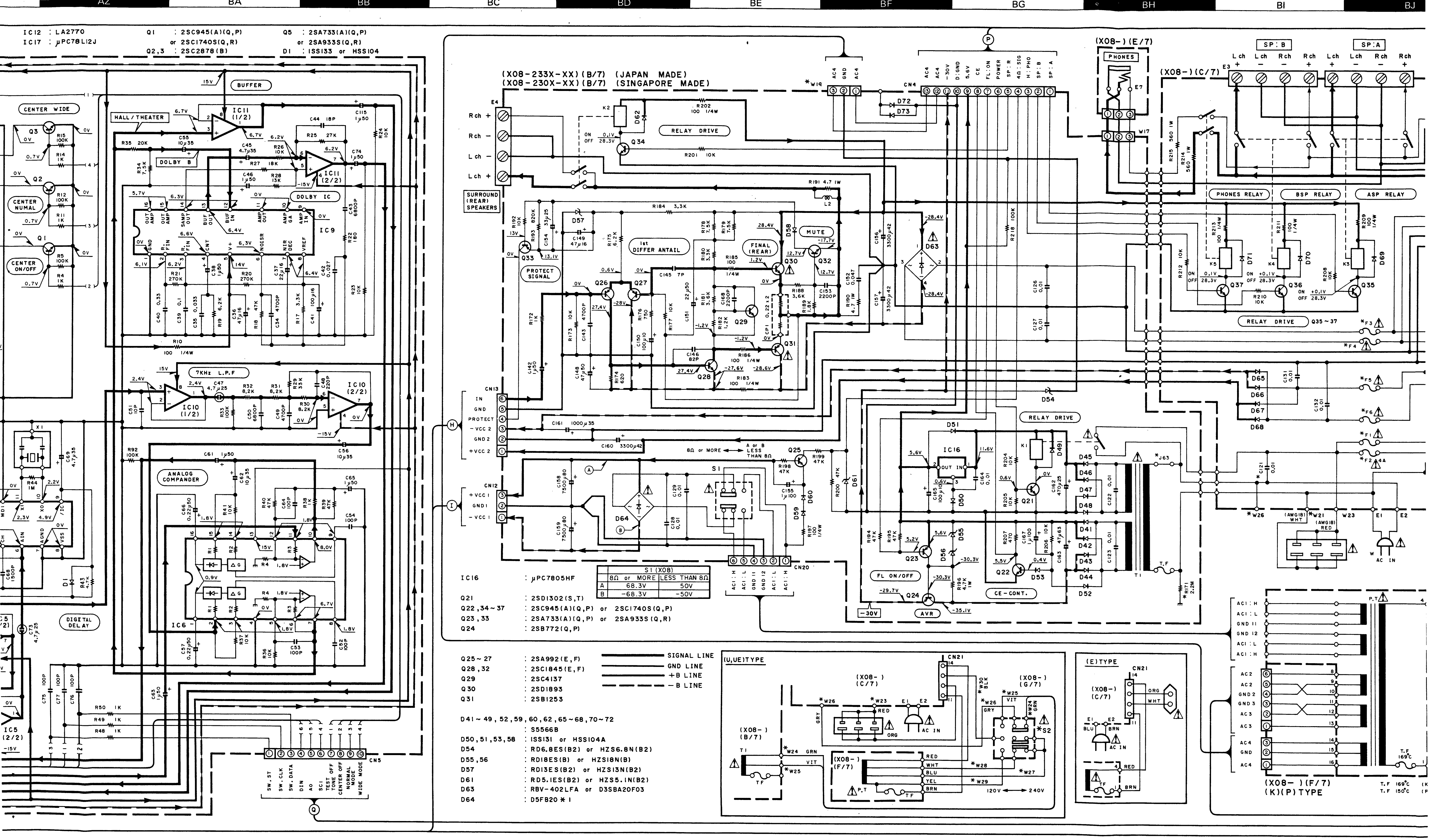
Y05-2440-10

KR-V9010

KENWOOD


AS
AT
AU
AV
AW
AX
AY
AZ
BA
BB
1
2
3
4
5
6
7
(X08-233X-XX) (A/7) (JAPAN MADE)
(X08-230X-XX) (A/7) (SINGAPORE MADE)
IC1,3 : NJM2058D
IC2 : TC4011UBP
IC4 : TC9162N
IC5,11 : NJM4565L
IC6 : μPC4571C
IC7 : NJM78L05A
IC8 : YM3428
IC9 : LA2730
IC10 : NJM072BL
IC12 : LA2770
IC17 : μPC78L12J
Q1 : 2SC945(A)(Q,P)
or 2SC1740S(Q,R)
Q2,3 : 2SC2878(B)
Q5 : 2SA733(A)(Q,P)
or 2SA933S(Q,R)
D1 : 1SS133 or HSS104
NOISE T.P
TEST TONE ON/OFF
TEST TONE IC2,3
NOISE LEVEL
BUFFER
CENTER WIDE
CENTER NUMAL
CENTER ON/OFF
HALL/THEATER
DOLBY B
DOLBY IC
IC9
7KHz L.P.F
PRO LOGIC IC
IC12
PRO LOGIC
SURROUND SELECTOR (PRO.LOG./HALL/THEATER)
IC4
L+R
L−R
HALL
THEATER
ANALOG COMPANDER
IC6
IC8
DIGITAL DELAY
CN16
Rch IN
GND
Lch IN
REAR SURROUND OUT
CENTER OUT
Rch OUT
GND
Lch OUT
−14V
+14V
DOLBY LEVEL 300mV
Lch T.P
Rch T.P
CENTER T.P
REAR SURROUND T.P
GND
CN5
SW.ST
SW.CLK
SW.DATA
DIN
AO
SCI
TEST TONE
CENTER OFF
NORMAL MODE
WIDE MODE
Rch +
Rch −
Lch −
Lch +
SURROUND (REAR) SPEAKERS
IN
GND
PROTECT
−VCC 2
GND 2
+VCC 2
+VCC 1
GND 1
−VCC 1
IC16
Q21
Q22,34 ~
Q23,33
Q24
Q25 ~ 27
Q28,32
Q29
Q30
Q31
D41 ~ 49
D50,51,
D54
D55,56
D57
D61
D63
D64


2SA733(A)
2SA992
2SC1845
2SC2878
2SC945(A)
2SD1302
2SA933S
2SC1740S
2SB772
2SC4137
2SD1893
2SB1253
LA2730
TC9162N
TC4011UBP
NJM2058D
μPC7805HF
μPC78L12J
NJM78L05A
E C B
B C E
E C B
E C B
B C E
16
9
8
1
28
15
14
1
14
8
7
1
14
8
7
1
OUTPUT
GND
INPUT (Case)
INPUT
GND
OUTPUT
INPUT
GND
OUTPUT


AZ
BA
BB
BC
BD
BE
BF
BG
BH
BI
BJ
BUFFER
CENTER WIDE
HALL / THEATER
DOLBY B
DOLBY IC
IC9
IC11 (1/2)
IC11 (2/2)
CENTER NUMAL
CENTER ON/OFF
7KHz L.P.F
IC10 (1/2)
IC10 (2/2)
ANALOG COMPANDER
IC6
DIGITAL DELAY
IC5 (2/2)
(X08-233X-XX) (B/7) (JAPAN MADE)
(X08-230X-XX) (B/7) (SINGAPORE MADE)
RELAY DRIVE
SURROUND (REAR) SPEAKERS
PROTECT SIGNAL
1st DIFFER ANTAIL
FINAL (REAR)
MUTE
FL ON/OFF
AVR
CE-CONT.
(X08-) (E/7)
PHONES
(X08-) (C/7)
SP:B
SP:A
PHONES RELAY
BSP RELAY
ASP RELAY
(U,UE) TYPE
(E) TYPE
(X08-) (F/7)
(K)(P) TYPE
AC IN

IC12 : LA2770
IC17 : μPC78L12J

Q1 : 2SC945(A)(Q,P)
or 2SC1740S(Q,R)
Q2,3 : 2SC2878(B)

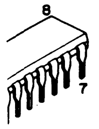
Q5 : 2SA733(A)(Q,P)
or 2SA933S(Q,R)
D1 : 1SS133 or HSS104

S1 (X08)	8Ω or MORE	LESS THAN 8Ω
A	68.3V	50V
B	-68.3V	-50V

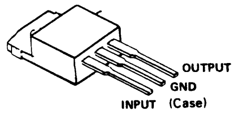
IC16	: μPC7805HF
Q21	: 2SD1302(S,T)
Q22,34~37	: 2SC945(A)(Q,P) or 2SC1740S(Q,P)
Q23,33	: 2SA733(A)(Q,P) or 2SA933S(Q,R)
Q24	: 2SB772(Q,P)
Q25~27	: 2SA992(E,F)
Q28,32	: 2SC1845(E,F)
Q29	: 2SC4137
Q30	: 2SD1893
Q31	: 2SB1253
D41~49,52,59,60,62,65~68,70~72	: S5566B
D50,51,53,58	: 1SS131 or HSS104A
D54	: RD6.8ES(B2) or HZS6.8N(B2)
D55,56	: RD18ES(B) or HZS18N(B)
D57	: RD13ES(B2) or HZS13N(B2)
D61	: RD5.1ES(B2) or HZS5.1N(B2)
D63	: RBV-402LFA or D3SBA20F03
D64	: D5FB20 *1

SIGNAL LINE
GND LINE
+B LINE
-B LINE

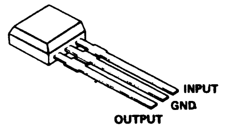
58D



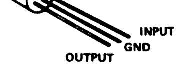
μPC7805HF


OUTPUT
GND
INPUT (Case)

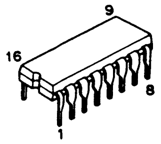
μPC78L12J


INPUT
GND
OUTPUT

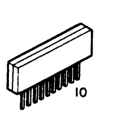
NJM78L05A


INPUT
GND
OUTPUT

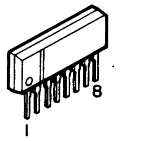
μPC1571C
YM3428



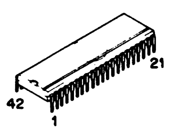
LB1641



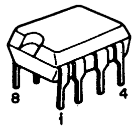
NJM072BL



LA2770



NJM4565L



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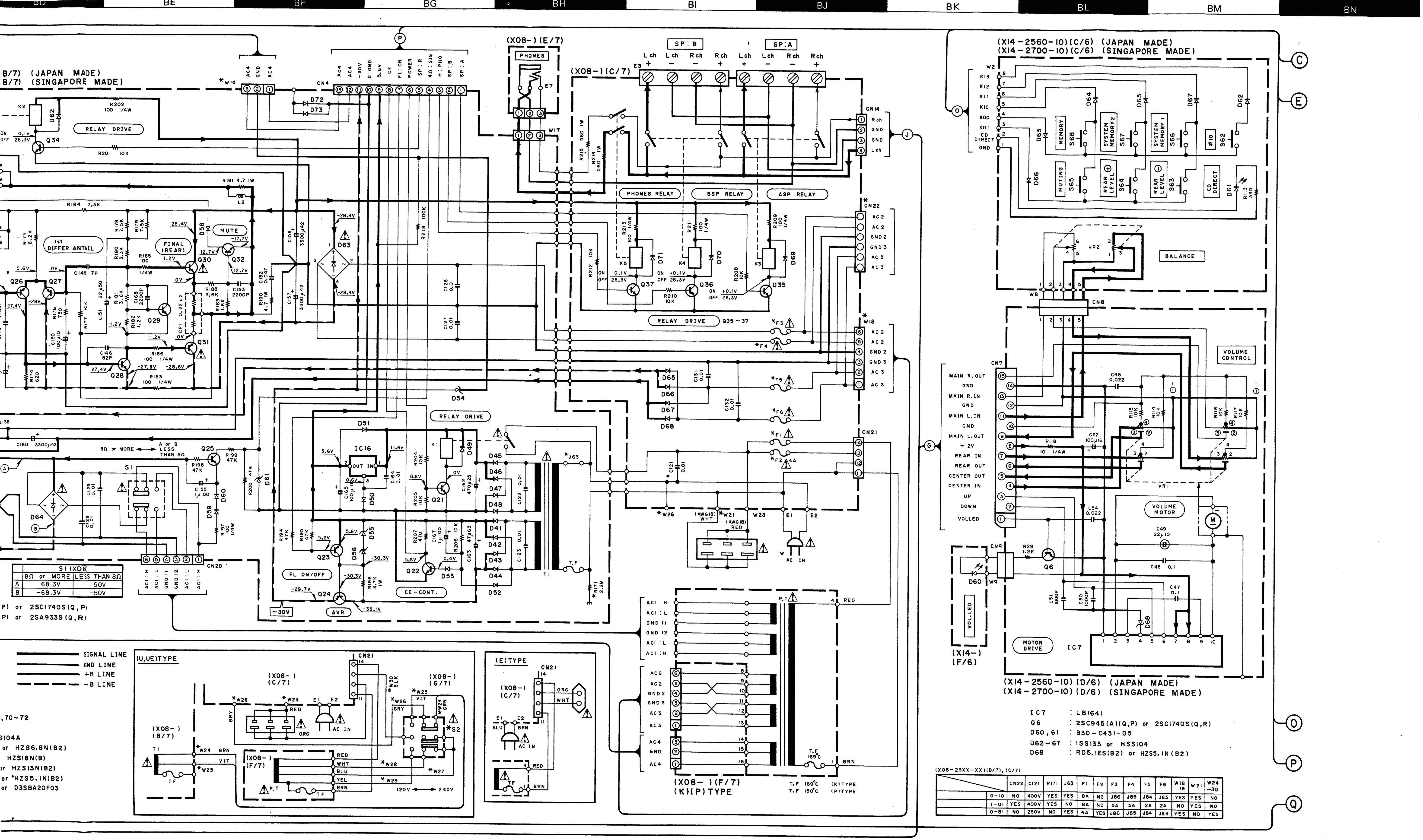

BD
BE
BF
BG
BH
BI
BJ
BK
BL
BM
BN
B/7) (JAPAN MADE)
B/7) (SINGAPORE MADE)
RELAY DRIVE
1st DIFFER ANTAIL
FINAL (REAR)
MUTE
(X08-)(E/7)
PHONES
(X08-)(C/7)
SP:B
SP:A
Lch
Rch
PHONES RELAY
BSP RELAY
ASP RELAY
RELAY DRIVE Q35~37
FL ON/OFF
AVR
CE-CONT.
IC16
(X14-2560-10)(C/6) (JAPAN MADE)
(X14-2700-10)(C/6) (SINGAPORE MADE)
MEMORY
SYSTEM MEMORY2
SYSTEM MEMORY1
MUTING
REAR LEVEL
CD DIRECT
BALANCE
VOLUME CONTROL
MAIN R.OUT
GND
MAIN R.IN
MAIN L.IN
MAIN L.OUT
+12V
REAR IN
REAR OUT
CENTER OUT
CENTER IN
UP
DOWN
VOLLED
VOLUME MOTOR
MOTOR DRIVE
IC7
VOL.LED
(X14-)(F/6)
(X14-2560-10)(D/6) (JAPAN MADE)
(X14-2700-10)(D/6) (SINGAPORE MADE)
SIGNAL LINE
GND LINE
+B LINE
-B LINE
(U,UE)TYPE
(E)TYPE
(X08-)(F/7)
(K)(P)TYPE
T.F 169°C (K)TYPE
T.F 150°C (P)TYPE
120V ↔ 240V
,70~72
S104A
or HZS6.8N(B2)
HZS18N(B2)
or HZS13N(B2)
or *HZS5.1N(B2)
or D3SBA20F03
P) or 2SC1740S(Q,P)
P) or 2SA933S(Q,R)

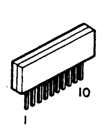
	S1 (X08)	
	8Ω or MORE	LESS THAN 8Ω
A	68.3V	50V
B	-68.3V	-50V

IC7 : LB1641
Q6 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
D60, 61 : B30-0431-05
D62~67 : 1SS133 or HSS104
D68 : RD5.1ES(B2) or HZS5.1N(B2)

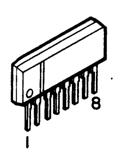
(X08-23XX-XX)(B/7), (C/7)

	CN22	C121	R171	J63	F1	F2	F3	F4	F5	F6	W18 19	W21	W24 ~30
0-10	NO	400V	YES	YES	8A	NO	J86	J85	J84	J83	YES	YES	NO
1-01	YES	400V	YES	NO	8A	NO	5A	5A	2A	2A	NO	YES	NO
0-81	NO	250V	NO	YES	4A	YES	J86	J85	J84	J83	YES	NO	YES

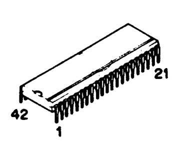
LB1641



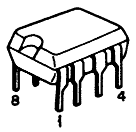
NJM072BL



LA2770



NJM4565L



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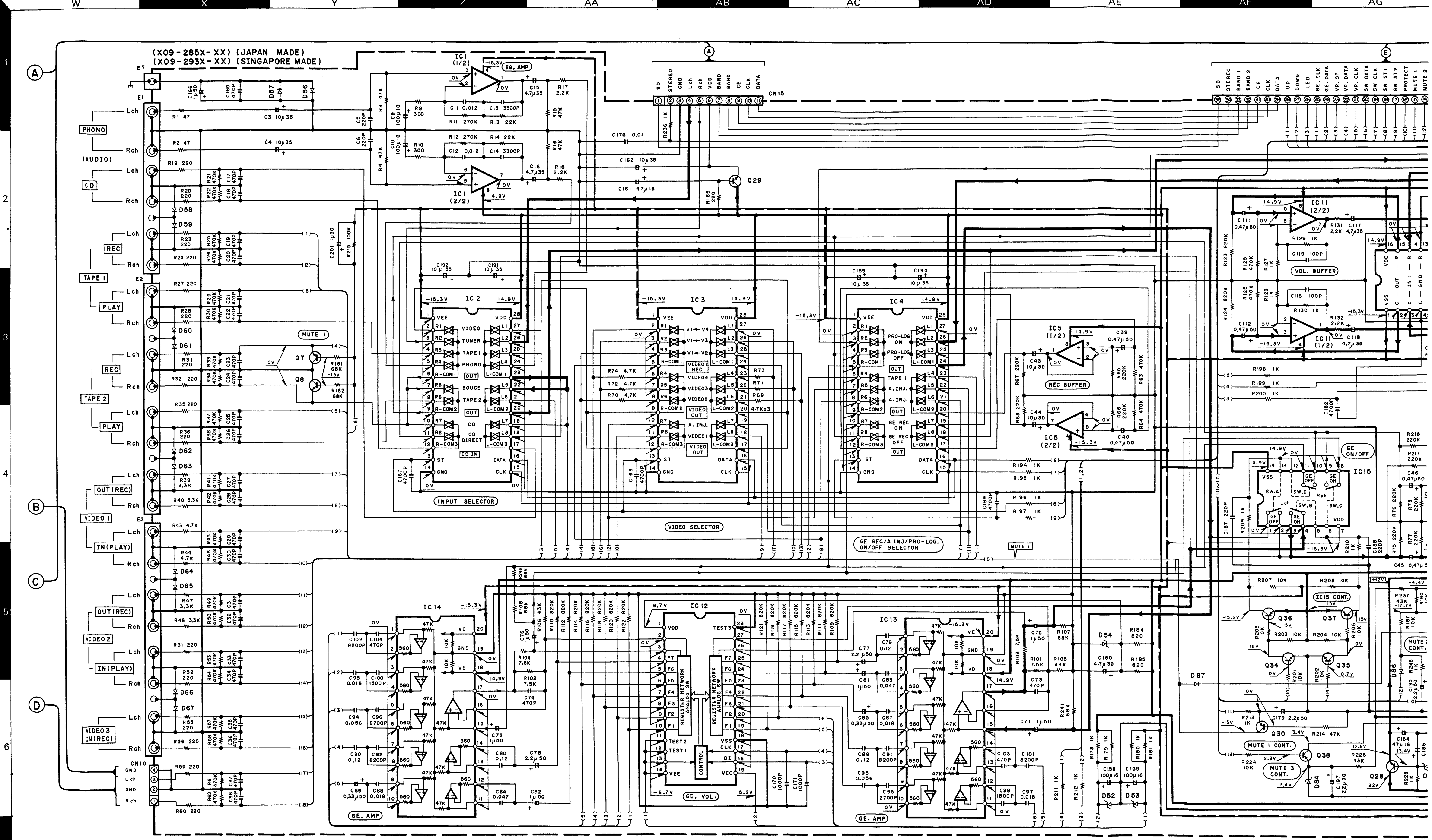
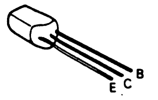
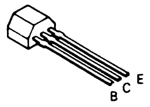
Y05-2440-10

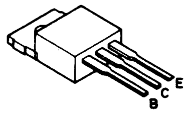
KR-V9010

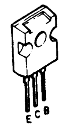
KENWOOD

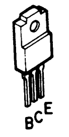

W
X
Y
Z
AA
AB
AC
AD
AE
AF
AG
1
2
3
4
5
6
7
(X09-285X-XX) (JAPAN MADE)
(X09-293X-XX) (SINGAPORE MADE)
A
B
C
D
E
E7
E1
E2
E3
PHONO
(AUDIO)
CD
REC
TAPE 1
PLAY
MUTE 1
TAPE 2
OUT (REC)
VIDEO 1
IN (PLAY)
VIDEO 2
VIDEO 3 IN (REC)
CN10
GND
Lch
Rch
IC1 (1/2)
EQ. AMP
IC1 (2/2)
Q29
CN15
SD
STEREO
GND
Lch
Rch
VDD
BAND
BAND
CE
CLK
DATA
IC2
INPUT SELECTOR
VIDEO
TUNER
TAPE 1
PHONO
SOURCE
TAPE 2
CD
CD DIRECT
CD IN
OUT
IC3
VIDEO SELECTOR
VIDEO REC
VIDEO OUT
A. INJ.
IC4
PRO-LOG ON
PRO-LOG OFF
A. INJ.
GE REC ON
GE REC OFF
GE REC/A INJ/PRO-LOG. ON/OFF SELECTOR
IC5 (1/2)
REC BUFFER
IC5 (2/2)
IC11 (2/2)
IC11 (1/2)
VOL. BUFFER
IC15
GE ON/OFF
MUTE 1
IC14
GE. AMP
IC12
REGISTER NETWORK ANALOG SW
CONTROL
GE. VOL.
IC13
GE. AMP
Q36
Q37
IC15 CONT.
Q34
Q35
Q30
MUTE 1 CONT.
Q38
MUTE 3 CONT.
Q28
D54
D87
D86
D84
D52
D53
MUTE 2 CONT.
14.9V
-15.3V
0V
SD
STEREO
BAND 1
BAND 2
CE
CLK
DATA
UP
DOWN
LED
GE. CLK
GE. DATA
VR. ST
VR. CLK
VR. DATA
SW DATA
SW CLK
SW ST1
SW ST2
PROTECT
MUTE 1
MUTE 2

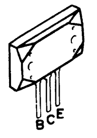

2SA1123
2SA733(A)
2SA992
2SC1845
2SC2003
2SC2631
2SC2878
2SC945(A)

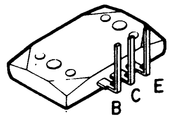

2SA933S
2SC1740S

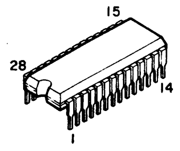

2SD1266

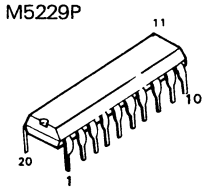

2SC4137

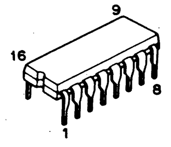

2SA1535
2SC3944

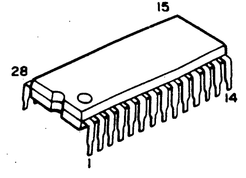

2SA1216*5

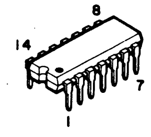

2SC2922*5

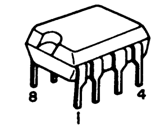

TC9163N
TC9164N

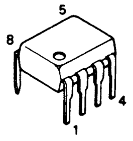

M5229P

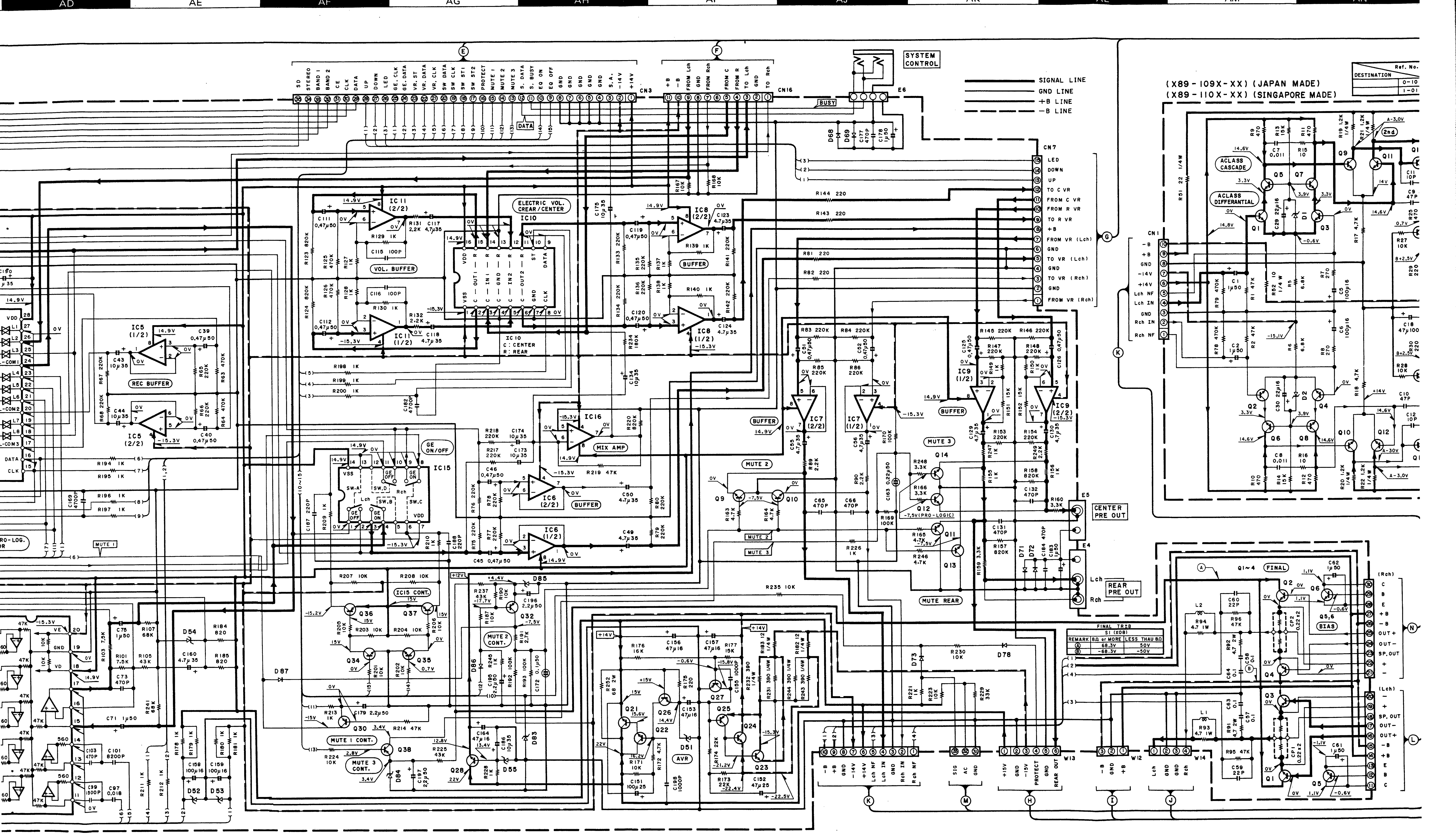

TC9176P


LC7522

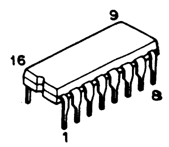

LC4966


μPC4570C-A

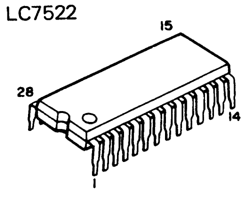

NJM4558D


AD
AE
AF
AG
AH
AI
AJ
AK
AL
AM
AN
SYSTEM CONTROL
SIGNAL LINE
GND LINE
+B LINE
−B LINE
(X89-109X-XX) (JAPAN MADE)
(X89-110X-XX) (SINGAPORE MADE)
Ref. No.
DESTINATION
CN3
CN16
CN7
CN1
E6
BUSY
DATA
IC11 (2/2)
IC11 (1/2)
VOL. BUFFER
ELECTRIC VOL. CREAR/CENTER
IC10
IC10 C: CENTER R: REAR
IC8 (2/2)
IC8 (1/2)
BUFFER
IC5 (1/2)
IC5 (2/2)
REC BUFFER
IC16
MIX AMP
IC15
GE ON/OFF
IC6 (2/2)
IC6 (1/2)
IC7 (2/2)
IC7 (1/2)
IC9 (1/2)
IC9 (2/2)
MUTE 1
MUTE 2
MUTE 3
MUTE REAR
MUTE 1 CONT.
MUTE 2 CONT.
MUTE 3 CONT.
IC15 CONT.
AVR
CENTER PRE OUT
REAR PRE OUT
Lch
Rch
E4
E5
ACLASS CASCADE
ACLASS DIFFERANTIAL
Q1~4
FINAL
BIAS
Q5,6
FINAL TR±B
SI (X08)
REMARK
8Ω or MORE
LESS THAU 8Ω
Ⓐ 68.3V 50V
Ⓑ −68.3V −50V
W12
W13
W14
RO-LOG.
PRO-LOGIC

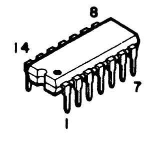
TC9176P



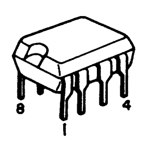
LC7522



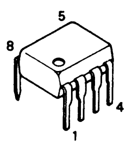
LC4966



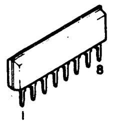
µPC4570C-A



NJM4558D



µPC1237HA



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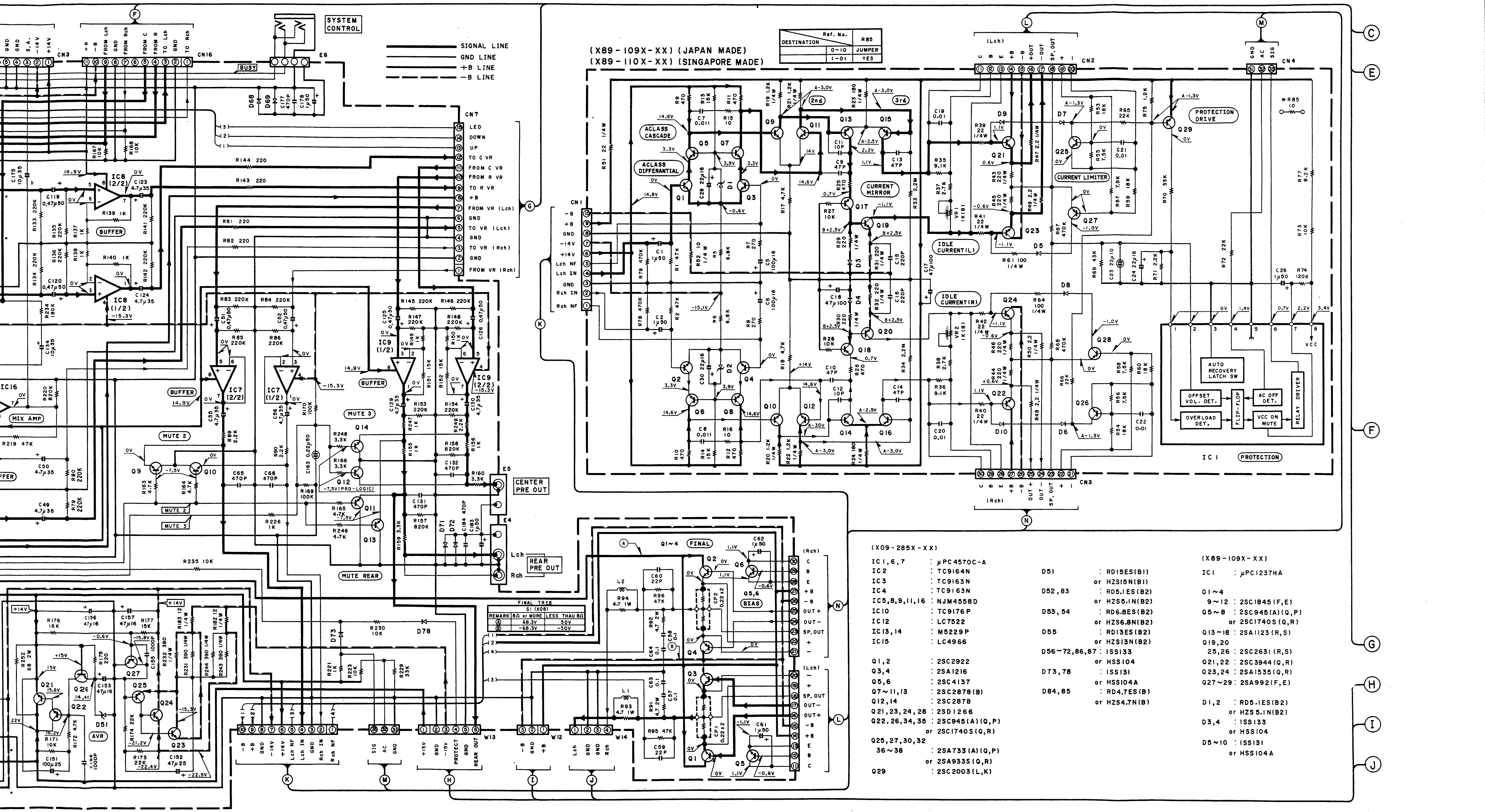
- Die angegebenen Gleichspannungsv
einem hochohmigen Voltmeter gem
wanken die Meßwerte aufgrund v
zwischen einzelnen instrumenten o
geringfügig.


SYSTEM CONTROL
SIGNAL LINE
GND LINE
+B LINE
−B LINE
(X89-109X-XX) (JAPAN MADE)
(X89-110X-XX) (SINGAPORE MADE)
ACLASS CASCADE
ACLASS DIFFERANTIAL
CURRENT MIRROR
IDLE CURRENT(L)
IDLE CURRENT(R)
CURRENT LIMITER
PROTECTION DRIVE
AUTO RECOVERY LATCH SW
OFFSET VOL. DET.
OVERLOAD DET.
FLIP-FLOP
AC OFF DET.
VCC ON MUTE
RELAY DRIVER
IC1
PROTECTION
BUFFER
MIX AMP
MUTE 2
MUTE 3
MUTE REAR
CENTER PRE OUT
REAR PRE OUT
Lch
Rch
FINAL
BIAS
AVR

DESTINATION \ Ref. No.		R85
	0-10	JUMPER
	1-01	YES

FINAL TR±B

S1 (X08)		
REMARK	8Ω or MORE	LESS THAU 8Ω
Ⓐ	68.3V	50V
Ⓑ	-68.3V	-50V

(X09-285X-XX)

IC1,6,7 : μPC4570C-A
IC2 : TC9164N
IC3 : TC9163N
IC4 : TC9163N
IC5,8,9,11,16 : NJM4558D
IC10 : TC9176P
IC12 : LC7522
IC13,14 : M5229P
IC15 : LC4966

Q1,2 : 2SC2922
Q3,4 : 2SA1216
Q5,6 : 2SC4137
Q7~11,13 : 2SC2878(B)
Q12,14 : 2SC2878
Q21,23,24,28 : 2SD1266
Q22,26,34,35 : 2SC945(A)(Q,P)
or 2SC1740S(Q,R)
Q25,27,30,32
36~38 : 2SA733(A)(Q,P)
or 2SA933S(Q,R)
Q29 : 2SC2003(L,K)

D51 : RD15ES(B1)
or HZS15N(B1)
D52,83 : RD5.1ES(B2)
or HZS5.1N(B2)
D53,54 : RD6.8ES(B2)
or HZS6.8N(B2)
D55 : RD13ES(B2)
or HZS13N(B2)
D56~72,86,87 : 1SS133
or HSS104
D73,78 : 1SS131
or HSS104A
D84,85 : RD4.7ES(B)
or HZS4.7N(B)

(X89-109X-XX)

IC1 : μPC1237HA

Q1~4
9~12 : 2SC1845(F,E)
Q5~8 : 2SC945(A)(Q,P)
or 2SC1740S(Q,R)
Q13~18 : 2SA1123(R,S)
Q19,20
25,26 : 2SC2631(R,S)
Q21,22 : 2SC3944(Q,R)
Q23,24 : 2SA1535(Q,R)
Q27~29 : 2SA992(F,E)

D1,2 : RD5.1ES(B2)
or HZS5.1N(B2)
D3,4 : 1SS133
or HSS104
D5~10 : 1SS131
or HSS104A

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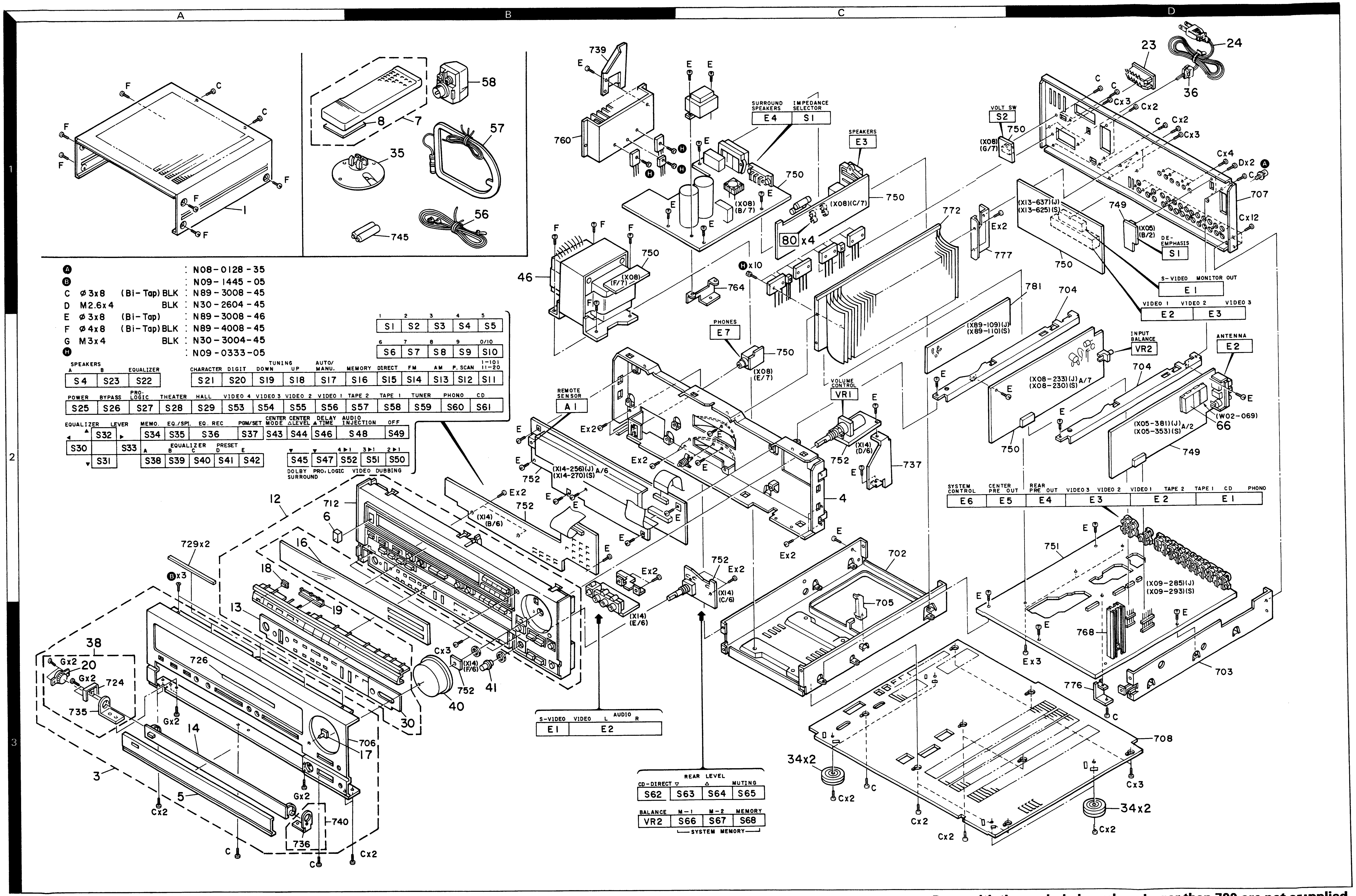
Y05-2440-10

KR-V9010

KENWOOD

KR-V9010 KR-V9010

EXPLODED VIEW


A
B
C
D
1
2
3
1
F
C
C
F
F
F
F
F
58
8
7
57
35
745
56
739
E
760
E
E
SURROUND SPEAKERS
IMPEDANCE SELECTOR
E4
S1
SPEAKERS
E3
750
(X08) (B/7)
(X08)(C/7)
80 x4
772
Ex2
777
781
704
46
F
750
(F/7) (X08)
764
H x10
PHONES
E7
750
(X08) (E/7)
(X89-109)(J)
(X89-110)(S)
VOLUME CONTROL
VR1
E
752
(X14) (D/6)
737
REMOTE SENSOR
A1
Ex2
(X14-256)(J) A/6
(X14-270)(S)
752
4
(X08-233)(J) A/7
(X08-230)(S)
INPUT BALANCE
VR2
704
ANTENNA
E2
(W02-069)
66
(X05-381)(J) A/2
(X05-353)(S)
749
750
23
24
36
C
Cx3
Cx2
Cx2
Cx3
VOLT SW
S2
750
(X08) (G/7)
(X13-637)(J)
(X13-625)(S)
749
(X05) (B/2)
DE-EMPHASIS
S1
Cx4
Dx2 A
C
707
Cx12
S-VIDEO MONITOR OUT
E1
VIDEO 1 VIDEO 2 VIDEO 3
E2 E3
SYSTEM CONTROL
CENTER PRE OUT
REAR PRE OUT
VIDEO 3 VIDEO 2 VIDEO 1 TAPE 2 TAPE 1 CD PHONO
E6 E5 E4 E3 E2 E1
1 2 3 4 5
S1 S2 S3 S4 S5
6 7 8 9 0/10
S6 S7 S8 S9 S10
SPEAKERS A B EQUALIZER
S4 S23 S22
CHARACTER DIGIT TUNING DOWN UP AUTO/ MANU. MEMORY DIRECT FM AM P. SCAN 1-10 11-20
S21 S20 S19 S18 S17 S16 S15 S14 S13 S12 S11
POWER BYPASS PRO-LOGIC THEATER HALL VIDEO 4 VIDEO 3 VIDEO 2 VIDEO 1 TAPE 2 TAPE 1 TUNER PHONO CD
S25 S26 S27 S28 S29 S53 S54 S55 S56 S57 S58 S59 S60 S61
EQUALIZER LEVER
S32 S30 S33 S31
MEMO. EQ./SPI. EQ. REC PGM/SET CENTER MODE CENTER △LEVEL DELAY ▲TIME AUDIO INJECTION OFF
S34 S35 S36 S37 S43 S44 S46 S48 S49
EQUALIZER A B C PRESET D E
S38 S39 S40 S41 S42
▼ ▼ 4▶1 3▶1 2▶1
S45 S47 S52 S51 S50
DOLBY SURROUND PRO. LOGIC VIDEO DUBBING
12
712
6
752
(X14) (B/6)
Ex2
E
729x2
B x3
16
18
19
13
Cx3
(X14) (F/6)
752
41
40
38
Gx2
20
Gx2
724
735
726
Gx2
14
706
17
30
3
5
Cx2
Gx2
740
736
C
C
Cx2
Ex2
752
Ex2
(X14) (E/6)
(X14) (C/6)
S-VIDEO VIDEO AUDIO L R
E1 E2
REAR LEVEL
CD-DIRECT ▽ △ MUTING
S62 S63 S64 S65
BALANCE M-1 M-2 MEMORY
VR2 S66 S67 S68
SYSTEM MEMORY
E
Ex2
702
705
751
(X09-285)(J)
(X09-293)(S)
E
768
Ex3
703
776
C
708
34x2
Cx2
C
Cx2
Cx2
Cx3
34x2
Cx2

A : N08-0128-35
B : N09-1445-05
C ø3x8 (Bi-Tap) BLK : N89-3008-45
D M2.6x4 BLK : N30-2604-45
E ø3x8 (Bi-Tap) : N89-3008-46
F ø4x8 (Bi-Tap) BLK : N89-4008-45
G M3x4 BLK : N30-3004-45
H : N09-0333-05

Parts with the exploded numbers larger than 700 are not supplied.

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KR-V9010 (J : Japan made, S : Singapore made)						
1	1A	*	A01-1750-01	METALLIC CABINET		S
1	1A	*	A01-1806-01	METALLIC CABINET		
3	3A	*	A20-5784-01	PANEL ASSY		
4	2C	*	A22-1093-02	SUB PANEL		
5	3A	*	A29-0148-02	PANEL		
6	2A	*	A33-0113-04	REFLECTOR		
7	1B	*	A70-0272-05	REMOTE CONTROLLER ASSY		
8	1B	*	A09-0086-08	BATTERY COVER (A70-0272-05)		
12	2B	*	B01-0436-02	PANEL ESCUTCHEON ASSY		
13	3A	*	B03-2528-03	DRESSING PLATE		
14	3A	*	B07-1884-02	ESCUTCHEON		
16	2C	*	B10-1011-03	SMOKED FILTER		
17	3A		B12-0048-04	INDICATOR		
18	2A	*	B12-0123-04	INDICATOR		
19	3A	*	B12-0124-04	INDICATOR		
-			B08-9063-04	INDICATOR		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0121-03	WARRANTY CARD	P	
-		*	B50-9512-00	INSTRUCTION MANUAL		
-		*	B50-9513-00	INSTRUCTION MANUAL	P	
-			B58-0223-04	CAUTION CARD (PRE-SET 120V)	U	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	UE	
20	2A		D39-0200-05	DAMPER		
⚠ 23	1D		E03-0086-05	AC OUTLET		
⚠ 24	1D		E30-0812-05	AC POWER CORD	UUE	
⚠ 24	1D		E30-0974-05	AC POWER CORD	KP	
28	3B	*	F19-0597-04	BLIND PLATE		
-		*	H01-8455-04	ITEM CARTON CASE		
-		*	H10-3805-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-3806-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H11-0028-04	POLYSTYRENE FOAMED BOARD		
-		*	H12-2061-04	PACKING FIXTURE		
-		*	H13-0026-04	CARTON BOARD		
-			H25-0181-04	PROTECTION BAG (150X260X0.05)		
-			H25-0225-04	PROTECTION BAG (850X450X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
36	3C,3D		J02-1034-05	FOOT		
37	1B		J19-2815-04	ANTENNA HOLDER		
38	2A	*	J21-5495-04	MOUNTING HARDWARE ASSY		
⚠ 39	1D		J42-0083-05	POWER CORD BUSHING		
41	3B	*	K29-3633-04	KNOB ASSY VOLUME		
42	3B	*	K29-3636-02	KNOB		
43	3B	*	K29-3642-04	KNOB		
⚠ 47	1B	*	L01-8621-05	POWER TRANSFORMER	K	
⚠ 47	1B	*	L01-8625-05	POWER TRANSFORMER	UUE	
⚠ 47	1B	*	L01-8627-05	POWER TRANSFORMER	P	
A			N08-0128-35	BINDING POST (EARTH)		

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B	2A		N09-1445-05	SET SCREW (M3X8)		
C	1D,2A		N89-3008-45	BINDING HEAD TAPTITE SCREW		
D	1D		N30-2604-45	PAN HEAD MACHINE SCREW	UUE	
E	1C,1D		N89-3008-46	BINDING HEAD TAPTITE SCREW		
F	1A,1B		N89-4008-45	BINDING HEAD TAPTITE SCREW		
G	3A		N30-3004-45	PAN HEAD MACHINE SCREW		
I	3A	*	N09-2704-05	TAPTITE SCREW		
57	1B		T90-0132-05	T TYPE ANTENNA		
58	1B		T90-0173-05	LOOP ANTENNA		
59	1B	*	T90-0177-05	ANTENNA ADAPTOR		
TUNER UNIT (X05-3810-10) : J (X05-3530-11) : S						
C1 ,2			CK45FF1H103Z	CERAMIC 0.010UF Z		
C3			CC93FCH1H391J	CERAMIC 390PF J		
C4			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C5			CE04KW1V100M	ELECTRO 10UF 35WV		
C6			CK45FF1H103Z	CERAMIC 0.010UF Z		
C7			CK45FF1H223Z	CERAMIC 0.022UF Z		
C8 ,9			CK45FF1H103Z	CERAMIC 0.010UF Z		
C10			CK45FF1H223Z	CERAMIC 0.022UF Z		
C11 ,12			CK45FF1H103Z	CERAMIC 0.010UF Z		
C13 -15			CE04KW1C470M	ELECTRO 47UF 16WV		
C16			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C17			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C18			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C19			CF92FV1H223J	MF 0.022UF J		
C20			CF92FV1H273J	MF 0.027UF J		
C21			CK45FF1H223Z	CERAMIC 0.022UF Z		
C22			CC45FSL1H101J	CERAMIC 100PF J		
C23			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C24			CF92FV1H273J	MF 0.027UF J		
C25			CC45FCH1H220J	CERAMIC 22PF J		
C26			CK45FF1H103Z	CERAMIC 0.010UF Z		
C27			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C28			CC45FCH1H220J	CERAMIC 22PF J		
C29 -31			CC45FSL1H101J	CERAMIC 100PF J		
C32			CK45FF1H103Z	CERAMIC 0.010UF Z		
C35			CC93FCH1H471J	CERAMIC 470PF J		
C36 ,37			CF92FV1H273J	MF 0.027UF J	UUE	
C36 ,37			CF92FV1H433J	MF 0.043UF J	KP	
C38 ,39			CF92FV1H153J	MF 0.015UF J	UUE	
C40			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C41 -43			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C44			CK45FB1H471K	CERAMIC 470PF K		
C45			CF92FV1H473J	MF 0.047UF J		
C46			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C48			CE04KW1V100M	ELECTRO 10UF 35WV		
C49			CE04KW1C470M	ELECTRO 47UF 16WV		
C52 ,53			CC45FSL1H151J	CERAMIC 150PF J		
TC1 ,2			C05-0303-05	CERAMIC TRIMMER CAPACITOR(20PF		
E2	2D		E20-0321-05	LOCK TERMINAL BOARD		
CF1 ,2			L72-0531-05	CERAMIC FILTER		
CF3			L72-0099-05	CERAMIC FILTER		
CF4			L72-0096-05	CERAMIC FILTER		

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L1			L40-1092-17	SMALL FIXED INDUCTOR(1UH,M)		
L2			L40-1021-14	SMALL FIXED INDUCTOR(1.0MH,K)		
L3			L40-1092-17	SMALL FIXED INDUCTOR(1UH,M)		
L4		⁎	L30-0484-05	FM IFT		
L5		⁎	L30-0485-05	FM IFT		
L8			L31-0509-05	MW-RF COIL		
L9			L32-0277-15	MW OSCILLATING COIL		
L10			L30-0362-05	AM IFT		
X1			L77-1122-05	CRYSTAL RESONATOR		
R14			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R22 ,23			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R24			RD14GB2E221J	FL-PROOF RD 220 J 1/4W		
R53			RD14GB2E330J	FL-PROOF RD 33 J 1/4W		
VR1			R12-3130-05	TRIMMING POT.(33K)		
VR2			R12-3126-05	TRIMMING POT.(10K)		
VR3			R12-1089-05	TRIMMING POT.(4.7K)		
VR4			R12-8015-05	TRIMMING POT.(1M)		
S1			S31-2072-05	SLIDE SWITCH	UUE	
D1 ,2			HSS104	DIODE		
D1 ,2			1SS133	DIODE		
D3			HZS5.1N(B2)	ZENER DIODE		
D3			RD5.1ES(B2)	ZENER DIODE		
D4 -6			HSS104	DIODE		
D4 -6			1SS133	DIODE		
D7			KV1236(Z2)	VARIABLE CAPACITANCE DIODE		
IC1			LA1265	IC(FM/AM TUNER)		
IC2			LM7001	IC(PLL FREQUENCY SYNTHESIZER)		
IC3			AN7470	IC(FM MPX)		
Q1			2SC1923(R,O)	TRANSISTOR		
Q2			2SC1740S(Q,R)	TRANSISTOR		
Q2			2SC945(A)(Q,P)	TRANSISTOR		
Q3			2SC1845(F,E)	TRANSISTOR		
Q4			2SC1740S(Q,R)	TRANSISTOR	E	
Q4			2SC945(A)(Q,P)	TRANSISTOR	E	
Q5 ,6			2SC1740S(Q,R)	TRANSISTOR	UUE	
Q5 ,6			2SC945(A)(Q,P)	TRANSISTOR	UUE	
Q7 ,8			2SA733(A)(Q,P)	TRANSISTOR		
Q7 ,8			2SA933S(Q,R)	TRANSISTOR		
66	2D		W02-0699-05	FM FRONT-END ASSY		
PRE AMPLIFIER UNIT (X08-2330-10) : J (X08-2300-10) : S						
C1 ,2			CF92FV1H224J	MF 0.22UF J		
C3			CF92FV1H682J	MF 6800PF J		
C4			CE04GW1E4R7M	LL-ELEC 4.7UF 25WV		
C5			CE04KW1C470M	ELECTRO 47UF 16WV		
C6 ,7			CE04GW1E4R7M	LL-ELEC 4.7UF 25WV		
C8 ,9			CF92FV1H154J	MF 0.15UF J		
C10 ,11			CF92FV1H104J	MF 0.10UF J		
C12			CK45FB1H681K	CERAMIC 680PF K		
C13 -18			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C19			CE04KW1C470M	ELECTRO 47UF 16WV		
C20 ,21			CF92FV1H224J	MF 0.22UF J		
C22			CE04GW1E4R7M	LL-ELEC 4.7UF 25WV		
C23			CE04KW1C221M	ELECTRO 220UF 16WV		

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C24 ,25			CE04GW1E4R7M	LL-ELEC	4.7UF	25WV		
C26			CF92FV1H682J	MF	6800PF	J		
C27 ,28			CF92FV1H334J	MF	0.33UF	J		
C29			CK45FB1H681K	CERAMIC	680PF	K		
C30 ,31			CF92FV1H104J	MF	0.10UF	J		
C32			CF92FV1H474J	MF	0.47UF	J		
C33			CE04KW1V100M	ELECTRO	10UF	35WV		
C34			CF92FV1H472J	MF	4700PF	J		
C35			CF92FV1H333J	MF	0.033UF	J		
C36			CE04KW1C470M	ELECTRO	47UF	16WV		
C37			CE04KW1C220M	ELECTRO	22UF	16WV		
C38			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C39			CF92FV1H104J	MF	0.10UF	J		
C40			CF92FV1H334J	MF	0.33UF	J		
C41			CE04KW1C101M	ELECTRO	100UF	16WV		
C42			CF92FV1H273J	MF	0.027UF	J		
C43			CF92FV1H682J	MF	6800PF	J		
C44			CC45FSL1H180J	CERAMIC	18PF	J		
C45			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C46			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C47			C90-1352-05	NP-ELEC	4.7UF	25WV		
C48			CC45FSL1H221J	CERAMIC	220PF	J		
C49			CF92FV1H472J	MF	4700PF	J		
C50			CF92FV1H682J	MF	6800PF	J		
C51			CC45FSL1H100D	CERAMIC	10PF	D		
C52 -54			CC45FSL1H101J	CERAMIC	100PF	J		
C55 ,56			CE04KW1V100M	ELECTRO	10UF	35WV		
C57			CE04KW1HR22M	ELECTRO	0.22UF	50WV		
C58			CE04KW1C470M	ELECTRO	47UF	16WV		
C59 ,60			CE04KW1A101M	ELECTRO	100UF	10WV		
C61			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C62			CE04KW1V100M	ELECTRO	10UF	35WV		
C63			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C64			CC45FSL1H101J	CERAMIC	100PF	J		
C65			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C66			CE04KW1HR22M	ELECTRO	0.22UF	50WV		
C67			CE04KW1C470M	ELECTRO	47UF	16WV		
C68		*	CC93FCH1H152J	CERAMIC	1500PF	J		
C69			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C70 -72			CC45FSL1H101J	CERAMIC	100PF	J		
C73			C90-1352-05	NP-ELEC	4.7UF	25WV		
C74			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C75 -77			CC45FSL1H101J	CERAMIC	100PF	J		
C78			CF92FV1H153J	MF	0.015UF	J		
C79			CF92FV1H392J	MF	3900PF	J		
C80 ,81			CK45FB1H821K	CERAMIC	820PF	K		
C82			CF92FV1H392J	MF	3900PF	J		
C83			CF92FV1H153J	MF	0.015UF	J		
C84 ,85			CC45FSL1H101J	CERAMIC	100PF	J		
C86 -88			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C89			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C90			CC45FSL1H101J	CERAMIC	100PF	J		
C91 ,92			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C93			CC45FSL1H101J	CERAMIC	100PF	J		
C94 ,95			CE04KW1H010M	ELECTRO	1.0UF	50WV		

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C115,116			CE04KW1H010M	ELECTRO 1.0UF 50WV		
⚠ C121			C91-0023-05	CERAMIC 0.01UF AC250V	UUE	
⚠ C121			C91-0647-05	CERAMIC 0.01UF P	KP	
C122,123			CK45FF1H103Z	CERAMIC 0.010UF Z		
C126-129			CK45FF1H103Z	CERAMIC 0.010UF Z		
C131,132			CK45FF1H103Z	CERAMIC 0.010UF Z		
C142			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C143			CK45FF1H472Z	CERAMIC 4700PF Z		
C145		*	CC45FSL1H070C	CERAMIC 7.0PF C		
C146			CC45FSL1H820J	CERAMIC 82PF J		
C148			CE04KW1H470M	ELECTRO 47UF 50WV		
C149			CE04KW1C470M	ELECTRO 47UF 16WV		
C150			CE04KW1A101M	ELECTRO 100UF 10WV		
C151			CE04KW1H220M	ELECTRO 22UF 50WV		
C152			CF92FV1H473J	MF 0.047UF J		
C153			CK45FB1H222K	CERAMIC 2200PF K		
C154			CE04KW1E330M	ELECTRO 33UF 25WV		
C155			CE04KW2A010M	ELECTRO 1.0UF 100WV		
C156,157			C90-1745-05	ELECTRO 300UF 42WV		
C158,159			C90-1318-05	ELECTRO 7500UF 80WV		
C160			C90-1745-05	ELECTRO 300UF 42WV		
C161			CE04KW1V102M	ELECTRO 1000UF 35WV		
C162			CE04KW1E471M	ELECTRO 470UF 25WV		
C163			CE04KW1J470M	ELECTRO 47UF 63WV		
C164			CK45FF1H103Z	CERAMIC 0.010UF Z		
C165			CE04KW1A101M	ELECTRO 100UF 10WV		
C167			CE04KW2A010M	ELECTRO 1.0UF 100WV		
C168			CK45FB1H222K	CERAMIC 2200PF K		
C169			CE04KW1A221M	ELECTRO 220UF 10WV		
E3	1C		E20-0823-05	LOCK TERMINAL BOARD(8P)		
E4	1C		E20-0459-05	LOCK TERMINAL BOARD		
E7	2C		E21-0162-05	PHONE JACK (3P)		
⚠ F1			F05-8029-05	FUSE (UL) (250V 8A)	KP	
F1 ,2			F06-4029-05	FUSE (250V 4A)	UUE	
F3 ,4			F04-5022-05	FUSE (UL) (125V 5A)	KP	
F5 ,6		*	F04-2025-05	FUSE (UL) (250V 2A)	P	
80	1C		J13-0041-05	FUSE CLIP	KP	
80	1C		J13-0054-05	FUSE CLIP		
L1			L40-2291-17	SMALL FIXED INDUCTOR		
L2			L39-0085-05	PHASE-COMPENSATION COIL		
T1		*	L01-8911-05	POWER TRANSFORMER	KP	
T1		*	L01-8914-05	POWER TRANSFORMER	UUE	
X1			L78-0255-15	RESONATOR		
K			N89-3010-46	BINDING HEAD TAPTITE SCREW		
H	1C		N09-0333-05	TAPPING SCREW (3X12)		
CP1			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
R10			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R171			R92-0173-05	RC 2.2M M 1/2W	KP	
R183			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R185			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R186			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R190			RS14DB3A4R7J	FL-PROOF RS 4.7 J 1W		
R191			RS14KB3A4R7J	FL-PROOF RS 4.7 J 1W		

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R196			RS14DB3A472J	FL-PROOF RS 4.7K J 1W		
R197			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R202			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R209			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R211			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R213			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R214			RS14DB3A561J	FL-PROOF RS 560 J 1W		
R215			RS14KB3A561J	FL-PROOF RS 560 J 1W		
VR1			R12-5059-05	TRIMMING POT.(100K)		
VR2			R05-5012-05	POTENTIOMETER		
⚠ K1			S51-1036-05	MAGNETIC RELAY		
K2 -5			S51-2078-05	MAGNETIC RELAY		
S1			S31-2136-05	SLIDE SWITCH (POWER TYPE)		
⚠ S2			S31-3010-05	SLIDE SWITCH	UUE	
D1			HSS104	DIODE		
D1			1SS133	DIODE		
D41 -49			S5566B	DIODE		
D50 ,51			HSS104A	DIODE		
D50 ,51			1SS131	DIODE		
D52			S5566B	DIODE		
D53			HSS104A	DIODE		
D53			1SS131	DIODE		
D54			HZS6.8N(B2)	ZENER DIODE		
D54			RD6.8ES(B2)	ZENER DIODE		
D55 ,56			HZS18N(B)	ZENER DIODE		
D55 ,56			RD18ES(B)	ZENER DIODE		
D57			HZS13N(B2)	ZENER DIODE		
D57			RD13ES(B2)	ZENER DIODE		
D58			HSS104A	DIODE		
D58			1SS131	DIODE		
D59 ,60			S5566B	DIODE		
D61			HZS5.1N(B2)	ZENER DIODE		
D61			RD5.1ES(B2)	ZENER DIODE		
D62			S5566B	DIODE		
D63			D3SBA20F03	DIODE		
D63			RBV-402LFA	DIODE		
D64			D5FB20*1	DIODE		
D65 -71			S5566B	DIODE		
D72 ,73			HSS104	DIODE		
D72 ,73			1SS133	DIODE		
IC1			NJM2058D	IC(OP AMP X4)		
IC2			TC4011UBP	IC(NAND X4)		
IC3			NJM2058D	IC(OP AMP X4)		
IC4			TC9162N	IC(ANALOG SWITCH ARRAY)		
IC5			NJM4565L	IC		
IC6			UPC1571C	IC(NOISE SUPPRESSOR)		
IC7			NJM78L05A	IC(VOLTAGE REGULATOR/ +5V)		
IC8			YM3428	IC		
IC9			LA2730	IC(DOLBY SYSTEM)		
IC10		*	NJM072BL	IC(OP AMP)		
IC11			NJM4565L	IC		
IC12		*	LA2770	IC		
IC16			UPC7805HF	IC(VOLTAGE REGULATOR/ +5V)		
IC17			UPC78L12J	IC(VOLTAGE REGULATOR/ +12V)		

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Q1			2SC1740S(Q,R)	TRANSISTOR		
Q1			2SC945(A)(Q,P)	TRANSISTOR		
Q2 ,3			2SC2878(B)	TRANSISTOR		
Q5			2SA733(A)(Q,P)	TRANSISTOR		
Q5			2SA933S(Q,R)	TRANSISTOR		
Q21			2SD1302(S,T)	TRANSISTOR		
Q22			2SC1740S(Q,R)	TRANSISTOR		
Q22			2SC945(A)(Q,P)	TRANSISTOR		
Q23			2SA733(A)(Q,P)	TRANSISTOR		
Q23			2SA933S(Q,R)	TRANSISTOR		
Q24			2SB772(Q,P)	TRANSISTOR		
Q25 -27			2SA992(F,E)	TRANSISTOR		
Q28			2SC1845(F,E)	TRANSISTOR		
Q29			2SC4137	TRANSISTOR		
Q30		*	2SD1893	TRANSISTOR		
Q31		*	2SB1253	TRANSISTOR		
Q32			2SC1845(F,E)	TRANSISTOR		
Q33			2SA733(A)(Q,P)	TRANSISTOR		
Q33			2SA933S(Q,R)	TRANSISTOR		
Q34 -37			2SC1740S(Q,R)	TRANSISTOR		
Q34 -37			2SC945(A)(Q,P)	TRANSISTOR		
AUDIO UNIT (X09-2850-10) : J (X09-2930-10) : S						
C3 ,4			CE04KW1V100M	ELECTRO 10UF 35WV		
C5 ,6			CC45FSL1H221J	CERAMIC 220PF J		
C9 ,10			CE04KW1A101M	ELECTRO 100UF 10WV		
C11 ,12			CF92FV1H123J	MF 0.012UF J		
C13 ,14			CF92FV1H332J	MF 3300PF J		
C15 ,16			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C17 -38			CK45FB1H471K	CERAMIC 470PF K		
C39 ,40			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C43 ,44			CE04KW1V100M	ELECTRO 10UF 35WV		
C45 ,46			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C49 ,50			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C51 ,52			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C55 ,56			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C57 ,58			CF92FV1H104J	MF 0.10UF J		
C59 ,60			CC45FSL1H220J	CERAMIC 22PF J		
C61 ,62			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C63 ,64			CF92FV1H104J	MF 0.10UF J		
C65 ,66			CK45FB1H471K	CERAMIC 470PF K		
C71 ,72			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C73 ,74			CK45FB1H471K	CERAMIC 470PF K		
C75 ,76			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C77 ,78			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C79 ,80			CF92FV1H124J	MF 0.12UF J		
C81 ,82			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C83 ,84			C91-0692-05	CERAMIC 0.047UF K		
C85 ,86			CE04KW1HR33M	ELECTRO 0.33UF 50WV		
C87 ,88			C91-0682-05	CERAMIC 0.018UF K		
C89 ,90			CF92FV1H124J	MF 0.12UF J		
C91 ,92			C91-0674-05	CERAMIC 0.0082UF K		
C93 ,94		*	C91-0694-05	CERAMIC 0.056UF K		
C95 ,96		*	C91-0662-05	CERAMIC 0.0027UF K		
C97 ,98			C91-0682-05	CERAMIC 0.018UF K		

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C99 ,100			C91-0656-05	CERAMIC 0.0015UF K		
C101,102			C91-0674-05	CERAMIC 0.0082UF K		
C103,104			CK45FB1H471K	CERAMIC 470PF K		
C111,112			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C115,116			CC45FSL1H101J	CERAMIC 100PF J		
C117,118			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C119,120			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C123,124			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C125,126			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C129,130			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C131,132			CK45FB1H471K	CERAMIC 470PF K		
C134			CE04KW1V100M	ELECTRO 10UF 35WV		
C151			CE04KW1E101M	ELECTRO 100UF 25WV		
C152			CE04KW1E470M	ELECTRO 47UF 25WV		
C153			CE04KW1C470M	ELECTRO 47UF 16WV		
C155			CK45FB1H102K	CERAMIC 1000PF K		
C156,157			CE04KW1C470M	ELECTRO 47UF 16WV		
C158,159			CE04KW1C101M	ELECTRO 100UF 16WV		
C160			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C161			CE04KW1C470M	ELECTRO 47UF 16WV		
C162			CE04KW1V100M	ELECTRO 10UF 35WV		
C163			C90-1456-05	NP-ELEC 0.22UF 50WV		
C164			CE04KW1C470M	ELECTRO 47UF 16WV		
C165			CK45FB1H471K	CERAMIC 470PF K		
C166			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C167-169			CK45FF1H472Z	CERAMIC 4700PF Z		
C170,171			CK45FB1H102K	CERAMIC 1000PF K		
C172			C90-1455-05	NP-ELEC 0.1UF 50WV		
C173-175			CE04KW1V100M	ELECTRO 10UF 35WV		
C176			CK45FF1H103Z	CERAMIC 0.010UF Z		
C177			CK45FB1H471K	CERAMIC 470PF K		
C178			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C179			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C182			CK45FF1H472Z	CERAMIC 4700PF Z		
C183			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C184			CK45FB1H471K	CERAMIC 470PF K		
C186			CE04KW1V100M	ELECTRO 10UF 35WV		
C187,188			CC45FSL1H221J	CERAMIC 220PF J		
C189-192			CE04KW1V100M	ELECTRO 10UF 35WV		
C195-197			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C198			CK45FB1H102K	CERAMIC 1000PF K		
C201			CE04KW1H010M	ELECTRO 1.0UF 50WV		
CN10			E10-0408-05	FLAT CABLE CONNECTOR		
E4	2D		E13-0235-05	PHONO JACK (2P)		
E5	2D		E13-0138-05	PHONO JACK (1P)		
E6	2C		E11-0188-05	MINIATURE PHONE JACK		
E2,3	2D		E13-0820-05	PHONO JACK (8P)		
E1	2D		E13-0634-05	PHONO JACK (6P)		
L1 ,2			L39-0085-05	PHASE-COMPENSATION COIL		
J			N35-3008-46	BINDING HEAD MACHINE SCREW		
C			N89-3008-45	BINDING HEAD TAPTITE SCREW		
E			N89-3008-46	BINDING HEAD TAPTITE SCREW		
H	1C		N09-0333-05	TAPPING SCREW (3X12)		

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CP1 ,2			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
R91 ,92			RS14KB3D4R7J	FL-PROOF RS 4.7 J 2W		
R93 ,94			RS14KB3A4R7J	FL-PROOF RS 4.7 J 1W		
R182,183		*	RD14AB2E120J	FL-PROOF RD 12 J 1/4W		
R231,232			RD14AB2E391J	FL-PROOF RD 390 J 1/4W		
R243,244			RD14AB2E391J	FL-PROOF RD 390 J 1/4W		
R252			RS14KB3D680J	FL-PROOF RS 68 J 2W		
D51		*	HZS15N(B1)	ZENER DIODE		
D51			HZS15N(B2)	ZENER DIODE		
D51		*	RD15ES(B1)	ZENER DIODE		
D51			RD15ES(B2)	ZENER DIODE		
D52			HZS5.1N(B2)	ZENER DIODE		
D52			RD5.1ES(B2)	ZENER DIODE		
D53 ,54			HZS6.8N(B2)	ZENER DIODE		
D53 ,54			RD6.8ES(B2)	ZENER DIODE		
D55			HZS13N(B2)	ZENER DIODE		
D55			RD13ES(B2)	ZENER DIODE		
D56 -69			HSS104	DIODE		
D56 -69			1SS133	DIODE		
D71 ,72			HSS104	DIODE		
D71 ,72			1SS133	DIODE		
D73			HSS104A	DIODE		
D73			1SS131	DIODE		
D78			HSS104A	DIODE		
D78			1SS131	DIODE		
D83			HZS5.1N(B2)	ZENER DIODE		
D83			RD5.1ES(B2)	ZENER DIODE		
D84 ,85			HZS4.7N(B)	ZENER DIODE		
D84 ,85			RD4.7ES(B)	ZENER DIODE		
D86 ,87			HSS104	DIODE		
D86 ,87			1SS133	DIODE		
IC1			UPC4570C-A	IC(OP AMP X2)		
IC2			TC9164N	IC(16CH BILATERAL SELECTOR SW)		
IC3 ,4			TC9163N	IC(BILATERAL SWITCH X16)		
IC5			NJM4558D	IC(OP AMP X2)		
IC6 ,7			UPC4570C-A	IC(OP AMP X2)		
IC8 ,9			NJM4558D	IC(OP AMP X2)		
IC10			TC9176P	IC(2CH ELECTRONIC VOLUME)		
IC11			NJM4558D	IC(OP AMP X2)		
IC12			LC7522	IC(7CH GRAPHIC EQUALIZER)		
IC13,14			M5229P	IC(7CH GRAPHIC EQUALIZER)		
IC15			LC4966	IC(CMOS LOGIC BILATERAL SW)		
IC16			NJM4558D	IC(OP AMP X2)		
Q1 ,2			2SC2922*5	TRANSISTOR		
Q3 ,4			2SA1216*5	TRANSISTOR		
Q5 ,6			2SC4137	TRANSISTOR		
Q7 -14			2SC2878(B)	TRANSISTOR		
Q21			2SD1266	TRANSISTOR		
Q22			2SC1740S(Q,R)	TRANSISTOR		
Q22			2SC945(A)(Q,P)	TRANSISTOR		
Q23 ,24			2SD1266	TRANSISTOR		
Q25			2SA733(A)(Q,P)	TRANSISTOR		
Q25			2SA933S(Q,R)	TRANSISTOR		
Q26			2SC1740S(Q,R)	TRANSISTOR		

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Q26			2SC945(A)(Q,P)	TRANSISTOR		
Q27			2SA733(A)(Q,P)	TRANSISTOR		
Q27			2SA933S(Q,R)	TRANSISTOR		
Q28			2SD1266	TRANSISTOR		
Q29			2SC2003(L,K)	TRANSISTOR		
Q30			2SA733(A)(Q,P)	TRANSISTOR		
Q30			2SA933S(Q,R)	TRANSISTOR		
Q32			2SA733(A)(Q,P)	TRANSISTOR		
Q32			2SA933S(Q,R)	TRANSISTOR		
Q34 ,35			2SC1740S(Q,R)	TRANSISTOR		
Q34 ,35			2SC945(A)(Q,P)	TRANSISTOR		
Q36 -38			2SA733(A)(Q,P)	TRANSISTOR		
Q36 -38			2SA933S(Q,R)	TRANSISTOR		
SUB UNIT (X13-6370-10) : J (X13-6250-10) : S						
C1 ,2			CE04KW1C470M	ELECTRO 47UF 16WV		
C3 ,4			CE04KW1A221M	ELECTRO 220UF 10WV		
C5 ,6			CE04KW1A101M	ELECTRO 100UF 10WV		
C7			CK45FF1H103Z	CERAMIC 0.010UF Z		
C8 -15			CE04KW1A101M	ELECTRO 100UF 10WV		
C16			CE04KW1H3R3M	ELECTRO 3.3UF 50WV		
C17 -19			CC45FSL1H101J	CERAMIC 100PF J		
C20			CC45FCH1H270J	CERAMIC 27PF J		
C21 ,22			CC45FCH1H220J	CERAMIC 22PF J		
C23			CC45FCH1H270J	CERAMIC 27PF J		
C24 ,25			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C26 -28			CE04KW1A101M	ELECTRO 100UF 10WV		
C29			CF92FV1H104J	MF 0.10UF J		
C30			CF92FV1H102J	MF 1000PF J		
C31			CF92FV1H242J	MF 2400PF J		
C32			CF92FV1H102J	MF 1000PF J		
C33			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C34			CE04KW1V100M	ELECTRO 10UF 35WV		
C35			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C36			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
E1			E06-0407-05	CYLINDRICAL RECEPTACLE		
E2,3			E13-0318-05	PHONO JACK (3P)		
L1			L40-1501-17	SMALL FIXED INDUCTOR(15UH,K)		
X1			L77-1131-05	CRYSTAL RESONATOR		
R1 ,2			RS14KB3D121J	FL-PROOF RS 120 J 2W		
R3 ,4			RS14KB3D180J	FL-PROOF RS 18 J 2W		
R45			RD14GB2E100J	FL-PROOF RD 10 J 1/4W		
R82 ,83			RS14KB3D151J	FL-PROOF RS 150 J 2W		
D1 ,2			HZS5.6N(B2)	ZENER DIODE		
D1 ,2			RD5.6ES(B2)	ZENER DIODE		
D3 -29			HSS104	DIODE		
D3 -29			1SS133	DIODE		
IC1			UPA80C	IC(7CH TRANSISTOR ARRAY)		
IC2 -4			UPD4066BC	IC(BILATERAL SWITCH X4)		
IC5			MB88323A-K2	IC(DISPLAY CONTROLLER)		
IC6			UPD4069UBC	IC(INVERTER X6)		
IC7 -11		*	MC14577A	IC		
Q1			2SD882(Q,P)	TRANSISTOR		
Q2			2SB772(Q,P)	TRANSISTOR		
Q3			2SC1740S(Q,R)	TRANSISTOR		

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Q3			2SC945(A)(Q,P)	TRANSISTOR		
Q4			2SA733(A)(Q,P)	TRANSISTOR		
Q4			2SA933S(Q,R)	TRANSISTOR		
Q5 -7			2SC1740S(Q,R)	TRANSISTOR		
Q5 -7			2SC945(A)(Q,P)	TRANSISTOR		
Q8			2SD882(Q,P)	TRANSISTOR		
Q9			2SB772(Q,P)	TRANSISTOR		
Q10 ,11			2SC2878(A,B)	TRANSISTOR		
DISPLAY UNIT (X14-2560-10) : J (X14-2700-10) : S						
D56 -59			B30-1012-05	LED(SLP-981C-50)		
D60 ,61			B30-0431-05	LED(LN21CPH)		
C1			C91-0928-05	BACKUP C 0.047F 5.5WV		
C2			CE04KW1A101M	ELECTRO 100UF 10WV		
C3			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C4 ,5			CC45FSL1H101J	CERAMIC 100PF J		
C6			CE04KW1C101M	ELECTRO 100UF 16WV		
C7			CE04KW1A101M	ELECTRO 100UF 10WV		
C8 ,9			CC45FSL1H330J	CERAMIC 33PF J		
C10			CK45FB1H102K	CERAMIC 1000PF K		
C11			CE04KW1C101M	ELECTRO 100UF 16WV		
C12			CE04KW1A101M	ELECTRO 100UF 10WV		
C13			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C14 ,15			CC45FSL1H101J	CERAMIC 100PF J		
C16 ,17			CC45FSL1H330J	CERAMIC 33PF J		
C18			CK45FB1H102K	CERAMIC 1000PF K		
C19 ,20			CE04KW1A101M	ELECTRO 100UF 10WV		
C21			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C22			CK45FB1H152K	CERAMIC 1500PF K		
C23 ,24			CE04KW1A101M	ELECTRO 100UF 10WV		
C25			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C26 ,27			C91-0680-05	CERAMIC 0.015UF K		
C28 ,29		*	C91-0672-05	CERAMIC 0.0068UF K		
C30 ,31			C91-0690-05	CERAMIC 0.039UF K		
C32 ,33			CK45FB1H391K	CERAMIC 390PF K		
C34 ,35			C91-0700-05	CERAMIC 0.1UF J		
C36 ,37			C91-0652-05	CERAMIC 0.001UF K		
C38 ,39		*	C91-0662-05	CERAMIC 0.0027UF K		
C40 -45			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C46			CK45FF1H223Z	CERAMIC 0.022UF Z		
C47 ,48			CF92FV1H104J	MF 0.10UF J		
C49			C90-1333-05	NP-ELEC 22UF 10WV		
C50 ,51			CK45FB1H102K	CERAMIC 1000PF K		
C52			CE04KW1C101M	ELECTRO 100UF 16WV		
C53 ,54			CK45FF1H223Z	CERAMIC 0.022UF Z		
C55 ,56			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C57 ,58			CK45FF1H103Z	CERAMIC 0.010UF Z		
CN8			E10-0509-05	FLAT CABLE CONNECTOR		
E1	3B	*	E06-0821-05	CYLINDRICAL RECEPTACLE		
E2	3B		E13-0311-05	PIN JACK		
E8,9,10			J11-0098-05	WIRE CLAMPER		
X1			L78-0209-05	RESONATOR (4.194MHZ)		
X2 ,3			L78-0239-05	RESONATOR		

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KR-V9010

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CP1		*	R90-0844-05	MULTI-COMP 1000PX2		
CP2		*	R90-0849-05	MULTI-COMP 1KX5 J 1/6W		
CP3		*	R90-0841-05	MULTI-COMP 510KX8 J 1/6W		
CP4			R90-0483-05	MULTI-COMP 100KX13 J 1/6W		
CP5		*	R90-0837-05	COMPOSITE ELEMENTS		
CP6			R90-0802-05	MULTI-COMP 100KX10 J 1/4W		
CP7		*	R90-0845-05	MULTI-COMP 1000PX2 +0 .01		
CP8			R90-0810-05	MULTIPLE RESISTOR		
CP9		*	R90-0842-05	MULTI-COMP 1000PX4		
CP10			R90-0482-05	MULTI-COMP 100KX4 J 1/6W		
CP11		*	R90-0843-05	MULTI-COMP 1000PX3		
CP12			R90-0810-05	MULTIPLE RESISTOR		
CP13		*	R90-0842-05	MULTI-COMP 1000PX4		
CP14			R90-0482-05	MULTI-COMP 100KX4 J 1/6W		
CP15		*	R90-0843-05	MULTI-COMP 1000PX3		
CP16			R90-0483-05	MULTI-COMP 100KX13 J 1/6W		
CP17			R90-0493-05	MULTI-COMP 100KX9 J 1/6W		
CP18		*	R90-0846-05	MULTI-COMP 150X7 J 1/6W		
CP19		*	R90-0847-05	MULTI-COMP 1/X7 J 1/6W		
CP20			R90-0278-05	MULTI-COMP 100KX7 J 1/6W		
CP21		*	R90-0848-05	MULTI-COMP 560KX7 J 1/6W		
CP22		*	R90-0838-05	COMPOSITE ELEMENTS		
CP23			R90-0492-05	MULTI-COMP 100KX8 J 1/6W		
R84			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
R118			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
R124		*	RD14AB2E3R9J	FL-PROOF RD 3.9 J 1/4W		
VR1		*	R29-5027-05	POTENTIOMETER		
VR2		*	R10-5032-05	POTENTIOMETER		
S1 -68			S40-1064-05	PUSH SWITCH		
D1 -10			HSS104	DIODE		
D1 -10			1SS133	DIODE		
D12 ,13			HSS104	DIODE		
D12 ,13			1SS133	DIODE		
D15 -17			HSS104	DIODE		
D15 -17			1SS133	DIODE		
D20 -23			HSS104	DIODE		
D20 -23			1SS133	DIODE		
D24			HZS10N(B2)	ZENER DIODE		
D24			RD10ES(B2)	ZENER DIODE		
D25 -30			HSS104	DIODE		
D25 -30			1SS133	DIODE		
D31			HZS6.8N(B2)	ZENER DIODE		
D31			RD6.8ES(B2)	ZENER DIODE		
D32 -55			HSS104	DIODE		
D32 -55			1SS133	DIODE		
D62 -67			HSS104	DIODE		
D62 -67			1SS133	DIODE		
D68			HZS5.1N(B2)	ZENER DIODE		
D68			RD5.1ES(B2)	ZENER DIODE		
D69 -83			HSS104	DIODE		
D69 -83			1SS133	DIODE		
FL1		*	BG-652GK	FLUORESCENT INDICATOR TUBE		
IC1		*	UPD75116CW-074	IC(MICROPROCESSOR)		
IC2 ,3		*	UPD7537ACU-220	IC(MICROPROCESSOR)		

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IC4			LC7565	IC(GRAPHIC EQ FL DISPLAY DR)		
IC5 ,6			CXD1067P	IC(SERIAL-PARALLEL CONVERTER)		
IC7			LB1641	IC(MOTOR DRIVER)		
IC8 ,9			NJM2058D	IC(OP AMP X4)		
IC8 ,9			UPC4574C	IC(OP AMP X4)		
Q1 -6			2SC1740S(Q,R)	TRANSISTOR		
Q1 -6			2SC945(A)(Q,P)	TRANSISTOR		
Q7 -11			2SA733(A)(Q,P)	TRANSISTOR		
Q7 -11			2SA933S(Q,R)	TRANSISTOR		
Q12			2SC1740S(Q,R)	TRANSISTOR		
Q12			2SC945(A)(Q,P)	TRANSISTOR		
Q13 ,14			DTC124ES	DIGITAL TRANSISTOR		
A1			W02-0975-05	ELECTRIC CIRCUIT MODULE		
MAIN AMPLIFIER UNIT (X89-1090-10) : J (X89-1100-10) S						
C1 ,2			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C5 ,6			CE04KW1C101M	ELECTRO 100UF 16WV		
C7 ,8			CF92FV1H113J	MF 0.011UF J		
C9 ,10			CC45FSL1H470J	CERAMIC 47PF J		
C11 ,12			CC45FSL1H100D	CERAMIC 10PF D		
C13 ,14			CC45FSL1H470J	CERAMIC 47PF J		
C15 ,16			CC45FSL1H221J	CERAMIC 220PF J		
C17 ,18			CE04KW2A470M	ELECTRO 47UF 100WV		
C19 -22			CK45FF1H103Z	CERAMIC 0.010UF Z		
C23			C90-1333-05	NP-ELEC 22UF 10WV		
C24			CE04KW1C220M	ELECTRO 22UF 16WV		
C26			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C29 ,30			CE04KW1C220M	ELECTRO 22UF 16WV		
R19 -22			RD14AB2E122J	FL-PROOF RD 1.2K J 1/4W		
R23 ,24			RD14AB2E181J	FL-PROOF RD 180 J 1/4W		
R29 -32			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
R39 -42			RD14AB2E220J	FL-PROOF RD 22 J 1/4W		
R43 -46			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
R47 -50			RD14AB2E2R2J	FL-PROOF RD 2.2 J 1/4W		
R51			RD14AB2E220J	FL-PROOF RD 22 J 1/4W		
R52			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
R61			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R64			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
VR1 ,2			R12-1070-05	TRIMMING POT.(1K)		
D1 ,2			HZS5.1N(B2)	ZENER DIODE		
D1 ,2			RD5.1ES(B2)	ZENER DIODE		
D3 ,4			HSS104	DIODE		
D3 ,4			1SS133	DIODE		
D5 -8			HSS104A	DIODE		
D5 -8			1SS131	DIODE		
D9 ,10			HSS104A	DIODE		
D9 ,10			1SS131	DIODE		
IC1			UPC1237HA	IC(POWER AMP)		
Q1 -4			2SC1845(F,E)	TRANSISTOR		
Q5 -8			2SC1740S(Q,R)	TRANSISTOR		
Q5 -8			2SC945(A)(Q,P)	TRANSISTOR		
Q9 -12			2SC1845(F,E)	TRANSISTOR		
Q13 -18			2SA1123(R,S)	TRANSISTOR		
Q19 ,20			2SC2631(R,S)	TRANSISTOR		

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Q21 ,22			2SC3944(Q,R)	TRANSISTOR		
Q23 ,24			2SA1535(Q,R)	TRANSISTOR		
Q25 ,26			2SC2631(R,S)	TRANSISTOR		
Q27 -29			2SA992(F,E)	TRANSISTOR		

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SPECIFICATIONS

AUDIO SECTION

Rated Power Output

130 watts per channel minimum RMS, both channels driven at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion. (FTC)

(Rear)
20 watts per channel minimum RMS, both channel driven at 8 ohms at 1 kHz with no more than 0.9% total harmonic distortion.

Total Harmonic Distortion
  (1 kHz, 8 ohms) 0.003%
Input Sensitivity/Impedance
  PHONO (MM) .... 2.5 mV/47 kohms
  CD, TAPE .... 200 mV/47 kohms
  VIDEO 250 mV/47kohms
Frequency Response
  CD, TAPE, VIDEO .... 10 Hz – 100 kHz $^{+0}_{-3}$ dB
Signal-to-Noise Ratio (IHF-A)
  PHONO (MM) .... 79 dB
  CD, TAPE .... 100 dB
  VIDEO 90dB
Graphic Equalizer
  Center Frequencies .... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
  Control Range .... ±12 dB

VIDEO SECTION

VIDEO Inputs/Outputs .... 1 Vp-p, 75 ohms unbalanced

FM TUNER SECTION

Tuning Frequency Range .... 87.5 MHz – 108 MHz
Antenna Impedance .... 75 ohms unbalanced
Sensitivity .... IHF .... 10.8 dBf (0.95 μV at 75 ohms)
Signal-to-Noise Ratio at 65 dBf (IHF)
  MONO .... 80 dB
  STEREO .... 74 dB
Total Harmonic Distortion at 1,000 Hz
  MONO 0.1%
  STEREO 0.2%
Frequency Response .... 30 Hz – 15 kHz $^{+0.5}_{-2.0}$ dB
Stereo Separation .... 50 dB at 1 kHz

AM TUNER SECTION

Tuning Frequency Range
  530 kHz – 1,610 kHz
  (with the AM tuning interval set at 10 kHz)
  531 kHz – 1,602 kHz
  (with the AM tuning interval set at 9 kHz)
Usable Sensitivity .... 10 μV/(400 μV/m)
Signal-to-Noise Ratio .... 50 dB
Total Harmonic Distortion 0.3%
Selectivity .... 25 dB

GENERAL

Power Consumption .... 5A...USA and Canada Model/ 500 W...Others
Dimensions .... 440 (W) × 162 (H) × 420 (D) mm
  (17-5/16") × (6-3/8") × (16-9/16")
Weight (Net) .... 14.7 kg (32.4 lb)

Note:
KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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